THE ECONOMICS OF SOCIAL DETERMINANTS OF HEALTH AND HEALTH INEQUALITIES:

a resource book

World Health Organization

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WHO Library Cataloguing-in-Publication Data

The economics of the social determinants of health and health inequalities: a resource book.

1.Socioeconomic factors. 2.Health care rationing. 3.Health status indicators. 4.Health status disparities. 5.Social justice. I.World Health Organization.

ISBN 978 92 4 154862 5 (NLM classification: WA 525)

Photo credits: istockphoto.com/Robert Churchill (top); DFID - UK Department for International Development, creative commons (left); iStockphoto.com/Alida Vanni (right); Colectivo Ecologista Jalisco, creative commons (bottom).

Design and layout by www.paprika-annecy.com

Printed in Luxembourg

BACKGROUND

The strong links between socioeconomic factors or policies and health were documented in the World Health Organization (WHO) Commission on Social Determinants of Health report. Yet even when health and health equity are seen as important markers of development, expressing the benefits of social determinants of health interventions in health and health equity terms alone is not always sufficiently persuasive in policy settings where health is not a priority, or when trade-offs exist between health and other public policy objectives.

Previous research has shown that increased attention to policies across sectors that improve health and health equity requires better preparation with regard to knowledge on the economic rationales for interventions, and how intersectoral policies are developed and implemented.

In 2012, the World Health Assembly passed resolution 65.8, which endorsed the Rio Political Declaration on Social Determinants of Health and emphasized the need for "delivering equitable economic growth through resolute action on social determinants of health across all sectors and at all levels". Improving understanding of economic rationales for intersectoral policy and programme interventions is therefore an important component of work for countries implementing social determinants of health recommendations. For this reason, WHO launched the Economics of Social Determinants of Health project to describe and discuss the potential for economic rationales to support the case for social determinants of health interventions, and to summarize economic evidence in key public policy areas.

ACKNOWLEDGEMENTS

The main researchers constituting the Research Team of the Economics of Social Determinants of Health project were Professor Marc Suhrcke, Ms. Carmen de Paz Nieves, Professor Richard Cookson, and Dr. Lorenzo Rocco. Nicole Valentine (Ethics and Social Determinants of Health, WHO) was responsible for overall coordination of the project, including collaboration with the Mexican Task Force.

The collaboration with the Mexican Task Force on the global project is gratefully acknowledged. In this regard, specific thanks go to Diego González, Philippe Lamy (formerly, WHO Representative, Mexico Country Office); Adolfo Martínez Valle, Alejandro Figueroa-Lara, Paulina Terrazas and Guadalupe López de Llergo from the Secretariat of Health of Mexico, and Sofia Leticia Morales and Kira Fortune from WHO/PAHO. The collaboration of the coordinating project team members from the Public Health Agency of Canada is also gratefully acknowledged, in particular Jane Laishes, James McDonald and Andrea Long.

The Global Task Force would also like to acknowledge with gratitude the discussions with WHO colleagues in internal WHO meetings in Geneva, and with experts who were assembled by WHO at the meeting on the economics of social determinants of health in October 2012. Experts at the meeting included nominations from the WHO Regional Office for Africa, experts representing United Nations agencies and experts from nongovernmental agencies.

Specific thanks are extended to colleagues from WHO, as follows: Rüdiger Krech and Eugenio Villar (Ethics and Social Determinants Department); Dan Chisholm (Mental Health and Substance Abuse Department; previously Health Systems Financing Department); Carlos Dora and Ivan Ivanov (Protection of the Human Environment Department); Joe Kutzin and Saksena Prianka (Health Systems Financing Department); Timo Ståhl (Chronic Diseases and Health Promotion Department); Eva Pascoal (WHO, Mozambique Country Office); Davison Munodawafa (WHO/AFRO); and Tiiu Sildva (WHO intern).

The project team acknowledges with gratitude contributions from the following individuals and institutions: Maggie Davies and Chris Brookes (Health Action Partnership International); Felix Masiye (Department of Economics, University of Zambia); James Humuza (School of Public Health, Rwanda); Howard Friedman and Alanna Armitage (United Nations Population Fund); Brian Lutz and Douglas Webb (United Nations Development Programme); Xenia Scheil-Adlung (International Labour Office) and Claudia Rokx (World Bank).

The external reviewers provided useful insights and comments that are also gratefully acknowledged: Dr. Anton E. Kunst (University of Amsterdam) and Dr. Ajay Tandon (World Bank). Carmel Williams and Isobel Ludford (Health in All Policies Unit, Government of South Australia) are also thanked for their valuable contributions to messaging.

The technical editing support of John Dawson is also acknowledged with gratitude.

Any errors or omissions are the fault of the project team alone.

Funding for this project was provided in part by the Public Health Agency of Canada.

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Background

In 2000, the World Health Organization (WHO) acknowledged the need to further explore the relationship between health and the economy by setting up the Commission on Macroeconomics and Health (CMH). One of the main conclusions of the work of CMH was that investing in health could not only be of intrinsic value but could in addition produce important economic gains.

In response to the growing concern about equity issues and their implications for overall development, WHO established the Commission on Social Determinants of Health (CSDH) in 2005, which focused on the "social justice" or human rights arguments for health investments. CSDH investigated the factors involved in the so-called "social gradient in health", which refers to the large observable differences in health outcomes within and between countries that are determined by avoidable inequalities in the access to resources and power. CSDH aimed to further investigate the causes of health inequities, with a deliberate detachment from economic considerations, and provide advice on how to tackle them effectively. CSDH also reviewed evidence for action on a wider scope of interventions than CMH, many of which require intersectoral collaboration or advocacy.

With CMH and CSDH having adopted different but perhaps complementary standpoints, it soon became clear that greater synergies had to be forged between the two. This WHO resource book on the economics of social determinants of health and health inequalities seeks to begin to build a bridge between the two approaches by explaining, illustrating and discussing the economic arguments that could (and could not) be put forth to support the case for investing in the social determinants of health *on average* and in the reduction in socially determined health *inequalities*. The resource book has two main objectives:

- to provide an overview and introduction into how economists would approach the assessment of the economic motivation to invest in the social determinants of health and socially determined health inequities, including what the major challenges are in this assessment;
- to illustrate the extent to which an economic argument can be made in favour of investment in three major social determinants of health areas: education, social protection, and urban development and infrastructure.

How do economists approach the assessment of economic motivation?

There are two fundamental components of the economic argument:

- **Establishing the basic rationale for public policy intervention.** Establishing the basic rationale for public policy intervention is needed because to economists public intervention is typically only an afterthought that applies if – and only if – the market fails to "work well" in delivering satisfactory outcomes on average (the efficiency-based rationale) or in terms of the distribution of the outcomes (the equity-based rationale).
- **Assessing whether the intervention represents good "value for money".** In order to mobilize investment in social determinants of health interventions, there is a need to establish the value for money of those interventions. However, the value for money of social determinants of health interventions may not be apparent, for several reasons: health impacts may not be fully (or at all) recognized in cost–benefit analyses; where compelling evidence of the benefits of social determinants of health interventions does exist, policy-makers in both the health sector and other sectors may not be aware of it; and this lack of knowledge may prevent public health advocates from pointing out positive practices in other sectors or from recommending policy health lenses or audits. Knowing the benefits of particular policy interventions will therefore help the health sector to lend support to policies in other sectors that strengthen the determinants of health. To this end, exchange of knowledge and disciplinary openness is part of the growing practice of Health in All Policies and can help to establish or cement clear synergies between policies where they exist, or reveal tensions where they do not.

Economic arguments for investment in the social determinants of health

Basic economic rationales

To the economist, social determinants of health interventions can be justified both on efficiency and equity grounds. Traditional welfare economics makes a conceptual distinction between the two, but recent thinking and evidence is forging a closer, synergistic link between them. Government interventions on social determinants of health may be justified from an efficiency perspective in instances of "market failure", when the free market fails to allocate resources efficiently, for example due to imperfect information, existence of externalities, provision of public goods or non-rational behaviour. All of these elements of market failure are of relevance to the social determinants of health.

At the same time, achieving the goal of equity is considered an important economic justification for public policy, even though it is harder to operationalize and more value laden than the efficiency rationale. Equity refers to a distribution of outcomes that is based on some notion or principle of justice. Equity does not necessarily and naturally improve as overall outcomes do, hence the potential need and justification for public intervention.

A concept of justice that is currently widely accepted among economists (and beyond) is that of substantive equality of opportunity – the idea that individuals should have the same opportunity to achieve outcomes such as high income or a long life, but do not necessarily need to achieve the same outcomes due to freedom of choice. Despite the widespread acceptance of the concept, and the obvious relevance for arguments supporting the need to tackle health inequities, challenges remain in terms of precisely measuring the concept.

Recent economic thinking and evidence is forging a closer, synergistic link between efficiency and equity. The idea of a trade-off between equality and efficiency is likely to have been overemphasized. In reality, neoclassical economics indicates that redistribution does have a price, but sometimes this price is worth paying. If there is a political decision to pay the price, neoclassical economists will (understandably) want to find the least costly strategy to reach that goal. The income distribution obtained through the workings of the market might not be the one that maximizes social welfare. In other words, the social preference for equity might be different to the one produced by the market.

In more than a few cases (for example early child development) efficiency and equity have been shown to have the potential to mutually enhance each other. In this case policy-makers do not face the dilemma of having to choose between them; instead, they can have the best of both worlds, thereby maximizing their chances of support from across the political spectrum.

Value for money

As mentioned above, there is a need to establish the value for money of social determinants of health interventions. This is particularly important where policies and practices in other sectors are not aligned with positive impacts on determinants of health and there may be arguments against this alignment. Economic evaluation evidence does exist for social determinants of health interventions, but comes in very different shapes and sizes. However, most cost–benefit studies in policy areas related to the social determinants of health fail to capture the health effects. Hence, there is a need to consider those effects (and provide credible evidence for them), as they may alter the prioritization decisions that would otherwise be based on understated returns of investment. While this sounds straightforward in theory, it encounters a number of challenges in practice, in particular when it comes to attribution of the changes in health outcomes to the intervention in question, the valuation of the potentially multifaceted benefits of the intervention, and incorporation of distributional effects into the economic evaluation.

Findings in specific public policy areas with implications for health

The resource book reviews and discusses the existing evidence in three major areas of social determinants of health: education, social protection, and urban development, housing and transport infrastructure (for

brevity, urban development and infrastructure). In each of these areas, there are important market failures that can in principle justify public policy interventions. For instance, credit markets providing loans to finance education might fail as creditors cannot observe the academic ability of the debtor and, hence, the student's probability of graduating, and they cannot prevent the debtor from opportunistically reneging on his or her obligation. The economic external benefits of education accrue (for instance) to work teams whose productivity increases due to the interaction among more educated people. Non-economic benefits of education are related to the higher degree of social cohesion and the higher standards of civilian cooperation that a more educated society typically achieves. For example, crime may fall and child rearing may improve in more educated communities. Positive externalities are also associated with the implementation of social protection schemes, such as unemployment and requalification programmes, as they counter the development of a black economy, which the unemployed might look to for prompt support. Early child development interventions, such as preschool education and kindergarten services, alleviate parents of a part of their duties and help especially mothers re-enter the labour market. An example from another area is enhancing energy efficiency of buildings, which contributes to reduced emissions and pollution, to the benefit of the entire neighbourhood.

The economic argument regarding the value for money of any interventions hinges on the evidence of effectiveness in the first place. This is why for each of the areas a review was undertaken of the extent to which interventions have been found to be effective in achieving their desired primary outcome (for example in terms of improving educational outcomes) and in promoting health.

- The beneficial impact of interventions to promote educational outcomes has been widely researched and documented, at least with respect to early childhood education, and in high-income countries. However, few interventions in the area of education have been examined for their health effects.
- A number of interventions or policies that could be subsumed under the heading of social protection have also been shown to promote people's economic welfare and often their health. This is particularly the case for targeted conditional cash transfers in middle-income and some low-income countries, which have been more systematically evaluated, or for some early child development programmes. Evidence on the effects of insurance-based and universal social protection instruments is, however, more limited, not least due to the methodological challenges involved.
- Interventions under the broad umbrella of "urban development" also show a range of positive effects for individual and societal welfare, and a number of assessments of their health effects have been undertaken. Interventions aimed at ensuring the affordability of housing, such as assisted rental programmes or measures to improve the internal conditions of housing, appear to have a positive impact on a number of health outcomes. More general urban development interventions, including slum upgrading in developing countries, also show positive health effects, as do traffic-calming programmes. However, as with other areas, most of the available evidence focuses on high-income countries, especially the United Kingdom and the United States.

Moving beyond the sheer effectiveness evidence, the resource book also reviews the direct evidence on value for money, usually in the form of cost–benefit analyses that exist in the areas of interest:

- In the domain of education, the cost–benefit evidence tends to come mainly from early child education programmes, which typically show good value for money.
- In social protection, a number of economic studies have assessed the net benefits for targeted conditional cash transfer programmes in middle-income and some low-income countries, as well as for some early child development programmes.
- Comparatively few studies in the field of urban development have assessed value for money of interventions, with some important exceptions: there is very favourable evidence for interventions that improve internal housing conditions and traffic-calming programmes, both of which have factored in the monetized health benefits.

Research gaps

There are very good economic reasons, both from an efficiency and an equity perspective, to invest in many areas of the social determinants of health, including the three broad areas covered by way of illustration in this resource book. More work is still needed, however, to build evidence to support investment in the social determinants of health. The following limitations in current knowledge can help set the scope for future research:

- The current evidence in many of the areas is biased towards high-income countries.
- There remain important challenges – in the absence of randomized experiments – in assessing the causal impact of interventions on average health outcomes and in particular on the distribution of health outcomes across socioeconomic groups.
- The majority of "economic evaluation" or "value for money" studies in these areas differ greatly in the type of costs and benefits they take account of, and few studies take into account the potential or actual health effects on the benefit side of their evaluation.
- Existing studies tend not to incorporate distributional (equity) effects in cost–benefit evaluations.

CHAPTER 1. Introduction

In 2000 the World Health Organization (WHO) acknowledged the need to further explore the relationship between health and the economy by setting up the Commission on Macroeconomics and Health (CMH). The importance of such an effort was evident in view of the large likely cost burden represented by certain diseases, as well as the growing need to maximize returns on public investment and prioritize public sector interventions. CMH, made up of 18 of the world's leading economists, public health experts, development professionals and policy-makers, was created with the mandate to produce research and analysis on different issues, organized in six working groups: (a) health, economic growth and poverty; (b) global public goods for health; (c) the mobilization of domestic resources for health; (d) health and the international economy; (e) improving health outcomes for the poor; and (f) international development assistance and health. One of the main conclusions of CMH's work was that investing in health – as defined by a narrower set of health services and health system functions – could produce important economic gains. In fact, CMH estimates indicated that increased health investment of $66 billion per year above current spending would generate at least $360 billion annually as a result of both direct and indirect economic benefits.

In 2005, and in response to the growing concern about equity issues and their implications for overall development, WHO created the Commission on Social Determinants of Health (CSDH), which focused on the "social justice" or human rights arguments for health investments. CSDH investigated the factors involved in the so-called "social gradient in health", which refers to the large observable differences in health outcomes within and between countries that are determined by circumstances in turn shaped by avoidable inequalities in the access to resources and power (*1*). CSDH was aimed at further investigating the causes of health inequities, many of which lie outside the direct control of ministries of health. It maintained a deliberate detachment from providing economic rationales, and providing advice on how to tackle them effectively. The CSDH final report was launched in 2008, and contained three overarching recommendations to governments, as well as to civil society and private sector actors and development institutions: (a) improve daily living conditions; (b) tackle the inequitable distribution of power, money and resources; and (c) measure and understand the problem and assess the impact of action.

With CMH and CSDH having adopted different (though complementary) standpoints, it soon became clear that greater synergies had to be forged between the two. In elaborating the economic rationale for addressing the social determinants of health, a new perspective needed to be added to that already put forward by CMH. CMH focused on more narrowly defined personal health care services, such as vaccinations and the provision of needed drugs (for example antiretroviral treatment), whereas CSDH focused on the need for health to engage in intersectoral policies and programmes to address health determinants. This resource book aims to complement the CSDH work by explaining, illustrating and discussing the economic arguments that could (and could not) be put forth to support the case for investing in the social determinants of health *on average* and the case for investing in the reduction in socially determined health inequalities – two issues that need to be kept distinct (though, as will be discussed, there may be overlap and indeed synergies between the two). This theme is also relevant to efforts to apply the Health in All Policies approach in countries, with the purpose of improving coverage of health services and removing barriers to population health and health equity.

1.1 Why this resource book?

For better or for worse, economic arguments are persuasive. While values, frequently encoded in law, establish a framework for appropriate action by individuals, governments, business and civil society organizations, economic evidence and arguments matter for deciding on action and priority setting. Which parts of society experience economic gains and which experience losses is part of this discussion. Unfortunately, specialists working in public health are frequently ill equipped to participate in policy dialogues as economic factors are introduced to the discussions. Even within the field of health financing, it is only in recent decades that serious inroads have been made to developing clear analyses that illuminate the evidence for reduction of out-of-pocket payments on the economic grounds of both efficiency (for example, failure to adhere to drug treatment regimes resulting in drug resistance) and equity (for example, rights for equal opportunities in relation to the initial conditions for producing societal welfare).

Public health specialists need to be more familiar with economic thinking and rationales for policy action. This familiarity will enable them to participate in policy dialogues and to commission the right types of analyses to help them make their case for or against policies impacting on health and health equity. This resource book aims to provide people working within public health with a range of information pertaining to how economic rationales are constructed and what kinds of policy questions they answer, and to review existing evidence on what the health, economic and other impacts are of intersectoral actions that address the social determinants of health and health inequalities (sometimes referred to together, for brevity's sake, as the "social determinants of health").

1.2 Using this resource book

This resource book aims to make a modest contribution to compiling and disseminating the growing economic evidence and rationales for addressing determinants beyond those under the direct control of the health sectors. It also brings to light the evidence in favour of more innovative intersectoral health system practices. Figure 1.1 has been developed as a guide for readers to access the most useful information to them. Although it is recommended to read the current chapter as well as chapters 2 and 3 to gain an overall understanding of how the economics of social determinants of health has been analysed, chapters 4 to 6 are accessible to readers as separate sector-specific resources.

As the first publication of its kind by WHO, this resource book contains many references. To increase their usefulness to the reader, the references have been located after each chapter to indicate the topics they are most relevant to. In this way, readers interested in more in-depth information on particular themes can easily identify the appropriate resources.

Future editions and updates of this publication are planned. These editions will be updated with evidence and rationales for more sectors of the economy. For this first edition, funding limitations required efforts to be concentrated on a few priority sectors with fair to robust available evidence, and which met other criteria listed below. Hopefully, the framework presented and gaps highlighted by the resource book will also lead to a greater quantity and improved quality of evidence being produced in the coming five years.

Purpose of the resource book

To provide economic arguments to guide policy-makers on how to present the case for action on the social determinants of health and the social determinants of unfair, avoidable health inequalities (health inequities); and to summarize information from available studies on health, economic and other impacts of policies and actions affecting social determinants of health.

What are the social determinants of health?

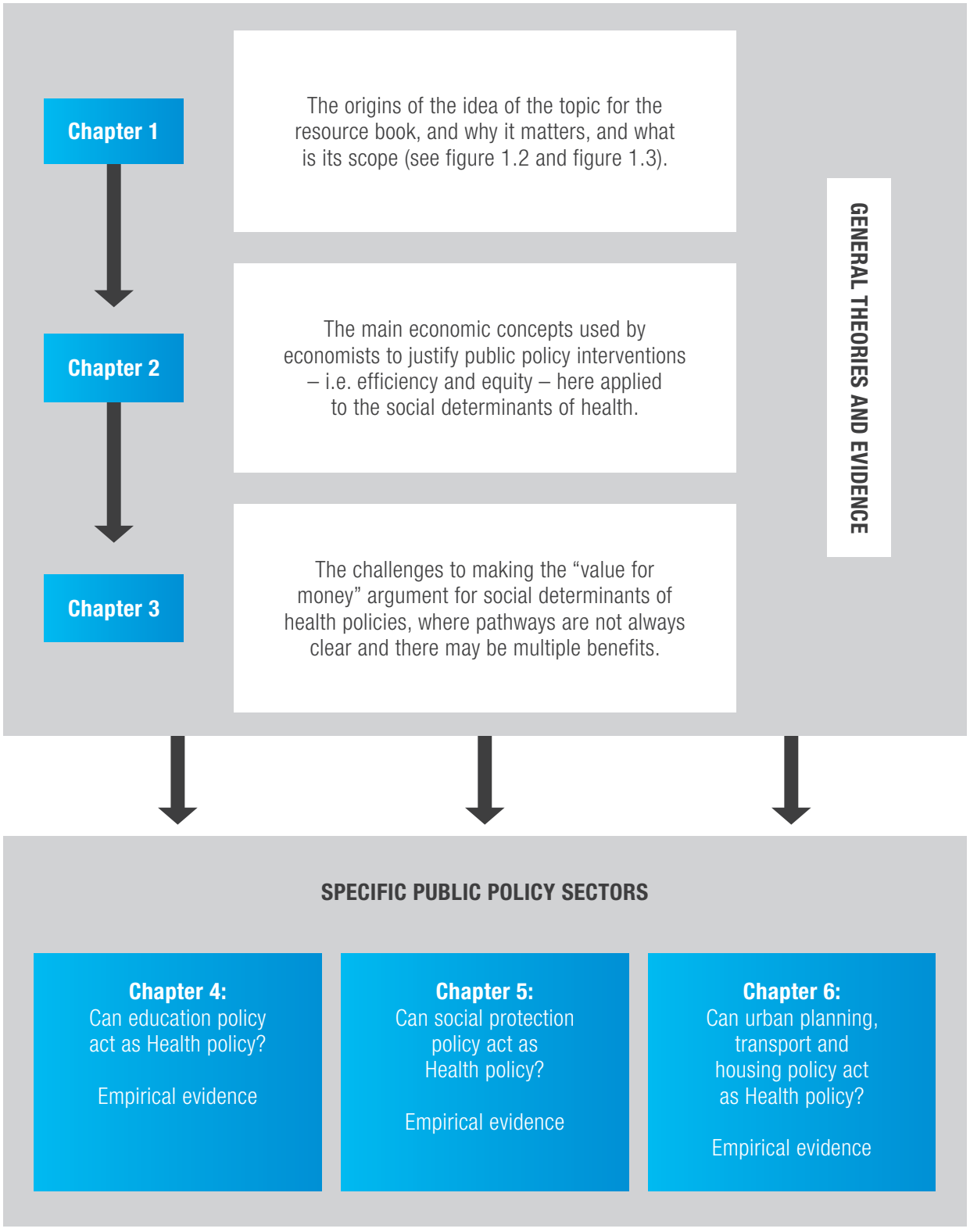
The social determinants of health are the conditions in which people are born, grow, live, work and age. These conditions are shaped by the distribution of money, power and resources at global, national and local levels – sometimes termed "structural determinants" of health inequities.

While the social determinants of health include the broad societal factors such as education, housing and income that influence the health of the population, social determinants of health inequalities (or inequities) are visible in the unequal distribution of the broad societal factors in a manner that is unfair. Hence, reference to the "distribution of money, power and resources" that *shape* the "broad societal factors", and related "conditions" experienced by particular population groups, is frequently what is meant by "social determinants of health inequities or inequalities".

While noting the difference between the terms "inequalities" and "inequities", the term "inequalities" is used in this text with reference to the operational approach of measuring health inequities in terms of inequalities in opportunities between different population groups. These outcome metrics are typically disaggregated by wealth or income quintiles, education, sex, place of residence or ethnicity.

See also: WHO website
www.who.int/social_determinants/en/

Figure 1.1 Overview of resource book information



Chapter 2 presents and illustrates briefly how an economic argument could be developed in favour of investment addressing the social determinants of health and socially determined health inequalities. There are two fundamental components of the economic argument. The first is about establishing the basic rationale for public policy intervention. Such a rationale is needed because to economists public intervention is typically only an afterthought that applies if, and only if, the market fails to "work well" in delivering satisfactory outcomes "on average" (the efficiency-based rationale), or in terms of the distribution of the outcomes (the equity-based rationale). The second component of the economic argument assesses whether the intervention represents good value for money – the cost–benefit criterion. Several so-called cost–benefit assessments exist in areas relevant to the social determinants of health. While this evidence may be known to the policy-makers from relevant sectors, it may be less known to the public health person trying to advocate investment in the social determinants of health. Many cost–benefit studies in policy areas related to the social determinants of health do however fail to capture the health effects. Hence, there is a need to consider those effects (and provide credible evidence for them), as they may alter the prioritization decisions that would otherwise be based on understated returns of investment. Chapter 3 then goes on to discuss in some more detail the challenges of the economic argument that revolve in particular around the "value for money" assessment. The main challenges include the attribution of the changes in health outcomes to the intervention in question and the valuation of the potentially multifaceted benefits of the intervention.

Chapters 4 to 6 present the empirical evidence that can be used to inform public health actors in intersectoral policy dialogues on relevant social determinants of health.

What economic evidence is synthesized?

The evidence presented focuses mostly on interventions relevant where:

- public policy-makers or other government actors and health work together in partnership;
- public policy-makers or other government actors lead the intervention with actual (or potential) support from health.

1.3 How were sectors chosen?

Three specific government sectors will be the focus of this analysis: education, social protection and urban development and infrastructure. The rationale for the selection of these sectors is based on the following criteria:

- the potential implications that intersectoral action under each of these areas can have for health outcomes and health inequalities directly or through the social determinants of health;
- the amount of available empirical evidence on the impact of interventions within these three sectors relative to others;
- the interest of including interventions that are designed and implemented at different government levels, including the central, regional and local levels;
- the categories prioritized by CSDH and its recommendations (box 1.1 and annex B).

Box 1.1 Summary of sectors prioritized by CSDH

The conclusions of the CSDH report highlight three different objectives to be attained in order to reduce socioeconomic inequities that hinder health equitable outcomes. The first and main one is to improve the conditions of daily life. For this purpose, several areas are identified, including early child development and education, urban and rural development, climate change, social protection, employment and universal health care.

1.4 How are interventions classified?

Across sectors, interventions will be classified using two different perspectives: (a) based on the conventional economic distinction between resource-based, information-based and incentive-based interventions; and (b) according to the degree to which the health sector is involved in them. Resource-based interventions throughout all sectors mainly aim to increase or expand the resources available to attain specific objectives. This is the most common type of intervention throughout the world, and includes for instance the provision or expansion of access to facilities for early child care or education at all levels. Information-based interventions in

turn aim to improve the information available to potential or actual beneficiaries of programmes or services, such as with regard to housing options. Finally, incentive-based interventions aim to modify the existing incentive structures with the purpose of achieving certain public objectives, including for instance changes in unhealthy or potentially risky behaviours regarding transportation or diet and exercise.

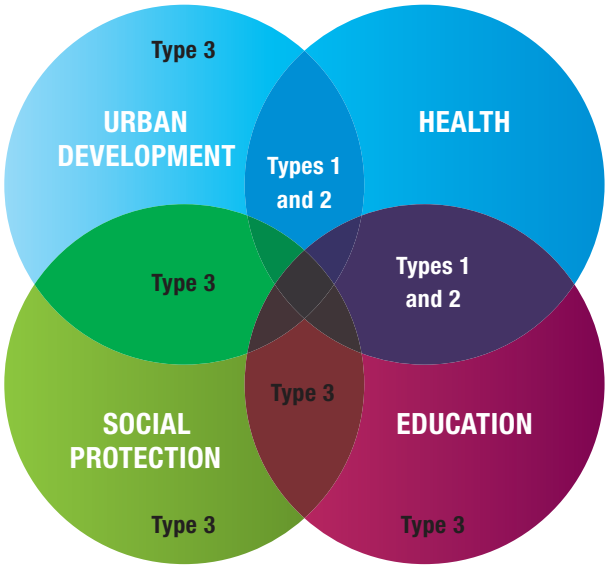
1.4.1 Intersectoral public policy and action perspective

With regard to health sector involvement, the resource book makes a general distinction between the following kinds of interventions (depicted in figure 1.2):

- **Type 1: health sector led.** Interventions that involve different sectors but fall within the explicit domain of health sector work, and where health policy practitioners generally lead the decision-making process; examples of this kind of intervention include nutritional supplementation programmes.
- **Type 2: cross-sectoral with health.** Interventions with potential health impacts that do not fall under the health sector space but where intersectoral collaboration is most often present, and where health policy practitioners would thus need to identify and make the case for specific interventions at the expense of others; for instance, a comprehensive early child development intervention.
- **Type 3: other sectors lead.** Measures that can have an effect on health but where the health sector and potential health outcomes are not considered in general, and therefore where health sector policy-makers would be more in need of theoretical and evidence-based support as outcomes relate to other sectors, as well as health, in order to enter a potential dialogue with the leading sectors; for instance, measures to expand education at different levels or parental benefits.

Although this resource book aims to cover the three types of interventions, it has a special focus on those under types 2 and 3, where the need for theoretical and evidence-based arguments to inform cross-sectoral dialogues is more pressing.

Figure 1.2 Types of interventions



1.4.2 Intervention evidence review orientation

The review of interventions is based on a life-cycle approach. This analytical framework, represented in figure 1.3, is based on the realization that health inequities and inequality in general vary with age, which might be related to the different health-related risks and outcomes that each stage of life entails. The downward pointing blocks in figure 1.3 show on which part of the life cycle, which is dichotomized simply as childhood or adulthood, the reviewed interventions focused. A life-cycle approach, which emphasizes the role of the accumulation of disadvantage over the life course, is therefore helpful to better understand how varied factors operate at different stages of life and contribute to the development of future health inequalities. In particular, there is wide consensus on the relevance that childhood can bear, as the period when most lifelong inequities affecting health start.

The review pays attention to the social norms and cultural components and outcomes of different interventions, but acknowledges the need for more work, possibly to be carried out for future editions, to do sufficient justice to this topic. Social norms and culture prove to have important implications for health- and health equity-related outcomes. As an example, maternal health

or family planning-related issues are often determined by cultural and societal stereotypes and values. Therefore, interventions aimed at improving health-related outcomes in these areas will need to pay attention to those cultural and social norms in their design and development, and incorporate a change in those beliefs as part of their objectives. Otherwise, and in many instances, the effectiveness of interventions may be undermined.

Significant differences can be observed across interventions depending on the specific country context. The level of income and the kind of welfare system are expected to determine the type of programmes (and evidence) found. In this sense, universal social protection programmes tend to be more common or consolidated in high-income countries, especially those with continental European welfare states; on the other hand, targeted programmes are more often found in developing and English-speaking high-income countries. In this sense, the literature review methodology (annex C) makes a distinction based on those two aspects: on the one hand, the level of income, based on the World Bank classification for lending (high income, low income, lower middle income and upper middle income); on the other, the type of welfare state, based on Muntaner (*2*), which differentiates between insecure, informal, social democratic, conservative, liberal and late democracy settings.

Under each of the selected sectors across these countries, the evidence of the impact of specific interventions has been analysed. The choice of specific interventions was based on the quantity and quality of evidence available, which has generally biased the review towards high-income English-speaking countries with liberal welfare systems and developing countries (middle and low income) with emerging, informal or insecure welfare states. In addition, interventions with larger potential and observed interactions with the health sector, and where the need for evidence-based arguments to make the health sector case was more clear, have been prioritized (in this sense, and as indicated before, the focus of analysis has been on type 2 and 3 interventions). The relevance of the specific interventions with regard to the social determinants of health as featured in the CSDH report (annex B), their general exemplarity, and the maximum degree possible of diversity with regard to the country contexts and the government level at which they are normally developed and implemented, were further considered for the selection. Although the review of evidence concerning specific interventions has not been exhaustive, a detailed scoping and review methodology (described in annex C) has been used for the identification and analysis.

Figure 1.3 Analytical framework

Key messages

- Economic rationales for interventions on health determinants are an important knowledge base for health policy-makers to be equipped with.
- The two fundamental components of the economic rationales are the establishment of the basic rationale for public intervention; and the cost–benefit assessment for investment in the social determinants of health.
- Impacts of inequality accumulate over the life course, positioning childhood as a critical time to intervene.
- Culture and context matter and influence the process of implementation and outcomes from the interventions. These impacts need to be accounted for during planning.

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CHAPTER 2. The economic argument for social determinants of health and socially determined health inequalities

Traditional welfare economics, representative of the neoclassical economic perspective, makes a conceptual distinction between the policy goals of improving equity and efficiency. On the one hand, policies might be desirable from an equity perspective.[1] Equity, which refers to a distribution of outcomes that is based on some notion or principle of justice, does not necessarily and naturally improve as overall outcomes do and may thus require some degree of public intervention. On the other hand, a government intervention may be justified from an efficiency perspective when resource allocation resulting from the private market produces less than optimal (and hence "inefficient") outcomes, referred to as "market failure". The following sections discuss first, the efficiency argument as it applies to issues relevant to the social determinants of health; and second, the equity argument. Subsequently the relationship between the two objectives is discussed. Most economists probably hold the view that the two typically cannot be achieved simultaneously and that a decision therefore has to be made at the societal and political level on how to trade off the two objectives. More recently, however, some research has shown that there may well be more than a few cases in which equity and efficiency can mutually enhance each other. In this case policy-makers do not face the dilemma of having to choose between the two and can have the best of both worlds, thereby minimizing political resistance.

Typical cases that health wants to make in dealing with other policy-makers relate either to the size of inequalities (the need for action) or to arguments for specific types of actions. Economics is useful in both instances. Box 2.1 describes one scenario. With respect to arguments for specific actions, questions typically in the mind of a policy-maker considering how to address determinants of health are:

- Will the action reduce health inequality?
- Will the action improve overall health and well-being?
- Will the action save money and reduce public expenditure?

[1] Equity refers to a distribution of resources that is based on some notion or principle of justice. Equality refers to the evenness of a distribution of resources.

Box 2.1 The use of cost of health inequality evidence

When making a case for concern about health inequality, it may be helpful to cite economic studies about the overall economic costs of health inequality. Evidence of this kind may be particularly helpful when addressing finance ministers and other policy-makers outside the health sector, who do not see health inequality as their primary concern. We shall call these studies "economic burden" studies, to distinguish them clearly from "economic evaluation" studies that compare the costs and the benefits of specific policy actions and which are discussed in the next section. Other authors use the term "economic impact" studies, but the term "economic burden" is used here in order to dispel any potentially misleading implication that such studies attempt to identify the causal impacts or effectiveness of interventions for tackling health inequality: they do not.

Imagine you are addressing a minister responsible for a large public sector budget. You want to persuade the minister to take a specific action to tackle health inequalities.

Question: How can you do this?

Answer: Economic burden studies can be used to highlight the size and importance of health inequality as a policy problem; they cannot help to make the case for particular policy solutions.

Question: Can evidence on the cost or burden of health inequality help to make any of these arguments?

1. The action will reduce health inequality.
2. The action will improve overall health and well-being.
3. The action will save money and reduce public expenditure.

Answer: Unfortunately not.

Box 2.2 describes the basic information needs and analytical approaches used in each case, and chapter 3 describes these aspects of economic analysis in more detail. The next sections describe the assumptions and logic used in economic rationales, and upon which all frameworks outlining costs and benefits of particular actions are based.

Box 2.2 Economic evaluation studies answer questions relative to specific actions

Imagine you are addressing a minister responsible for a large public sector budget. You want to persuade the minister to take a specific action to tackle health inequality. Imagine, further, that the action will require additional expenditure from the minister's budget over the next few years. You want to make three arguments:

1. The action will reduce health inequality.
2. The action will improve overall health and well-being.
3. The action will save money and reduce public expenditure.

Question: What evidence can help to make any of these arguments?

Answers:

Argument 1 requires effectiveness evidence about the impact of the action on the health of different social groups. Information about the size and importance of the health inequality problem is not enough – the minister wants to know how this specific action will influence health inequality.

Argument 2 requires cost–effectiveness analysis or cost–benefit analysis evidence about the net impact of the action on overall health and well-being – that is, the overall benefit minus the overall opportunity cost in terms of how the minister's budget could have otherwise been spent.

Argument 3 requires evidence about how this specific action will save money and reduce public expenditure. Evidence that health inequality in general imposes high costs on public budgets is not enough. The minister wants to know what impact this specific action will have on public budgets – and, in particular, on the minister's own budget.

The same logic applies to any kind of action in any policy area. It also applies to cases in which you want to persuade the minister *to avoid taking a specific action that will increase health inequality.* In that case, the minister wants to know how the specific action to be avoided will increase health inequality, how it will harm overall health and well-being, and how it will waste money and increase public expenditure in the long run.

2.1 Efficiency-based rationales for public policy intervention

The presence of economic costs attributable to ill health per se does not necessarily mean that there is reason for government to act, from an economic perspective (see box 2.1 and box 2.2 for a discussion on the use of "economic cost" or "economic burden" evidence). A rationale for public policy intervention based on the economic perspective differs markedly from a public health rationale. According to standard economic theory, public intervention is justified when private markets fail to function "efficiently". Efficiency is defined by economists in a very specific way: an allocation of resources is efficient if there is no way to increase benefits to an individual without making another individual worse off (this concept is known as "Pareto efficiency"). Likewise, an allocation is inefficient when it is possible to make one individual better off without harming anyone else. Intuitively, an inefficient allocation represents a certain waste of resources, either because there exist ways to produce more (or more generally, achieve better outcomes) with the same amount of inputs or because some resources are assigned to individuals who value them less than what other people are willing to pay for them. In these cases there are possibilities of reallocation that allow the economic system to prevent waste. When markets fail to achieve efficiency, there is scope for governments to intervene. Government interventions typically consist of regulations, direct production, taxation and, more generally, redistribution policies.

When markets achieve efficiency, the sovereignty of the consumer – the overriding principle in standard economic textbooks – is hard to challenge. In this world view, individuals are able to reach the maximum welfare possible and government intervention is but an afterthought. Indeed, any intervention would create distortions and produce inefficient allocations. The efficiency situation, however, hinges on quite restrictive assumptions, difficult to be met in reality, in particular that:

- this decision-making is based on sufficiently accurate – or "perfect" – information about the consequences of the decision (for example, that we are all fully informed of the consequences of the decision to smoke,

of limiting early exposure of children to language stimulation or of the iatrogenic causes associated with preterm births);

- all the costs and benefits associated with a decision are carried by the person making the choice (for example, that an individual will pay all the costs of an unhealthy lifestyle, including health care for chronic illness);
- people act "rationally", that is, they will always (consciously or unconsciously) weigh the costs and benefits of each decision they are to undertake and then choose the course of action that maximizes their expected net benefits (or "utility").

If these assumptions hold, then there is no economic justification for government to prevent any individuals from taking their preferred decisions.

A traditional welfare economics perspective does, however, also acknowledge that there may be exceptions that occur if one or more of these assumptions are violated. In this case the "free market outcome" will probably be inferior to the efficient situation: in these cases the economists speak of "market failure". Where markets have "failed", people could *in principle* be made better off if government pulled the right levers. Government might then either step in and produce or deliver the relevant good or service, or it may incentivize others to do so. Which of the measures governments should opt for within this range depends on the nature of the market failure as well as the institutional capacity of the government (*1*).

Related to each of the above critical assumptions, there are at least four potential sources of market failures that may be relevant as basic (partial) rationales for government intervention to address social determinants of health: imperfect information, externalities, public goods, and non-rational behaviour. Those market failures are called the "standard" efficiency-based market failures because they have commonly been discussed in the traditional welfare economics literature in all sorts of public policy contexts.

Beyond the standard welfare economic view, a very different view has emerged, drawing on increasingly popular research in behavioural economics (*2*).[2] This body of work potentially adds further justifications for government interventions. According to this view, there are situations in which people act on the basis of what has been called "bounded rationality": because people may not at all times be able (or willing) to undertake all the necessary calculations to find the choice that maximizes their lifetime utility, they may find ways to simplify choices. Or individuals' preferences might not follow the pattern posited by standard welfare economic theory. As a result of any of these imperfections the actions may then well differ from what would have been the perfect rational choice, but the way in which they differ may be predictable. This could offer an opportunity for governments to target those predictable "failures" in decision-making and to help people take those decisions that they would have chosen, had they been in a position to do so. The standard welfare economic rationale is first discussed below, then the behavioural economics perspective. The discussion will be illustrated with the help of relevant social determinants of health examples.

[2] The cause of behavioural economics was helped significantly by the Nobel Prize that was awarded to Daniel Kahnemann in 2002. This work and the resulting policy implications have been very successfully popularized by a book by Thaler and Sunstein (*2*).

Key messages: general

- Emerging evidence indicates that policies or interventions can increase equity and efficiency – a win-win result.
- The rationale for public policy intervention based on an economic perspective is different to one based on a public health rationale.
- A particular resource allocation is judged to be inefficient and requiring intervention if it is possible to make at least one person better off without harming anyone else – so-called "Pareto efficiency". This is the logic behind the "consumer is king" idea.
- Efficiency-based economics assumes markets will deliver efficiency as consumers make rational choices, with limited need for government intervention.
- Testing whether the Pareto efficiency criterion is met usually involves indirect assessments of a set of assumptions or preconditions. If these are not met, it is highly likely that market outcomes are inefficient in the Pareto sense. The assumptions include:
  - > Decision-making is based on accurate ("perfect") information.
  - > Costs and benefits associated with any decision are carried by the person making the decision alone.
  - > People act rationally in that they will always make decisions to maximize their expected net gain (across time).

2.2 Standard efficiency-based rationales

2.2.1 Imperfect or asymmetric information

There are typically good reasons to believe that markets fail to produce optimal outcomes because of lack of information. If people do not have sufficiently accurate information on the costs and benefits associated with a particular course of action, they may invest less. For example, parents investing in their child's education may not be fully aware of the wide-ranging, monetary and non-monetary long-term benefits of education, in which case they will invest less than they would, had they been aware of those benefits.

Not only can information be imperfect but it can be also distributed asymmetrically in the market. Typically sellers know the characteristics of the good they are selling much better than buyers, and might thus be tempted to profit from this informational advantage by selling a poor-quality good at a high price. Similarly, the person commissioning a work or a service is less informed about the details of the technology and the costs of production compared to the one actually doing the work. The latter might exploit the principal's ignorance by performing a low-quality service while pretending it is high quality. These behaviours can eventually lead to the closure of some markets. Credit and insurance markets are particularly plagued by asymmetric information problems and even in developed countries are largely imperfect (and in the rural areas of developing countries they are virtually absent) (box 2.3).

2.2.2 Externalities

So-called "internal" and "external" costs combined make up the total or "social" costs associated with a disease or a risk factor. External costs and benefits begin where internal costs and benefits end and comprise all those costs and benefits that are not borne or taken into account by the decision-maker. Drawing the line between internal and external consequences is of critical public policy relevance. Internal costs are the "private" costs borne by the individual, knowingly or not, and are generally irrelevant to an argument for government intervention within the efficiency rationale. The most obvious internal costs associated with a disease are the individual's morbidity and mortality costs, easily the greatest share of disease costs if converted into monetary values.

Box 2.3 Examples of information imperfections

Information problems are acute for a number of markets involved in the provision of at least some social determinants of health. For instance, credit markets providing loans to finance education might fail as creditors cannot observe the academic ability of debtors and, hence, the students' probability of graduating, and they cannot prevent debtors from opportunistically reneging on their obligations. Similarly, social protection schemes such as unemployment benefits are often limited in their scope because the insurer cannot tell whether workers lost their jobs because of a crisis or because they were caught shirking. Another example comes from the housing market. Rental properties are often less available than would be otherwise desirable because persons renting might decide not to pay and property owners have little means to defend their property. In credit markets asymmetric information can be typically overcome by means of adequate guarantees (collateral). This strategy is however unavailable to the less well off that have few resources to provide collateral.

Consider some unhealthy behaviour such as smoking, excess drinking, overeating or lack of physical activity. These behaviours have a negative effect on individual health and are the cause of several diseases. Degradation of individual health has a cost (pain, reduced autonomy or mobility, reduced productivity on the labour market) that is paid directly by the individual. With a (limited) world view that identifies these behaviours as "rational", all costs accruing to the individual are defined as internal costs. In addition, smoking or excessive alcohol consumption can have adverse effects on other people, either in the same family or in society more broadly. Examples include second-hand smoking, violence and crime associated with binge drinking and, most of all, the financial costs for health care that are paid out of the public budget in countries where the health system is funded by citizens' taxes. The sum of the costs of an individual behaviour accruing on the rest of the society is defined as external costs or "externalities".

Some courses of action can also have external benefits. For instance, going to work by bike rather than by car reduces overall pollution in a city, while also benefiting individual health. At the community level, creating green areas for children to play can improve the environmental quality of the air as well as provide opportunities for physical activity by children and their families. Individuals tend not to factor those external effects, either positive or negative, into their consumption choices. As a result, individual consumption of tobacco, alcohol or unhealthy foods, or unsafe sex, is often higher than is optimal from a societal "efficiency" viewpoint. Likewise, the number of children playing in parks or people commuting by bike may fall short of the social optimum. The market failure here manifests as a societal cost or benefit caused by an individual choice, and it justifies, in principle, a public policy intervention seeking to improve social welfare by modifying the opportunities for healthy individual behaviour. While modifying opportunities may be effectively engaged in through intervening in expanding education quality and availability, the typical strategy governments adopt to discourage the consumption of those goods producing negative externalities is imposing a tax on them. To stimulate the behaviours that produce positive externalities the primary policy lever is to subsidize them (for example, providing local government subsidies for swimming pools or parks in deprived areas). Positive externalities, both economic and non-economic, are associated with investment in many social determinants of health, such as education, social protection, early child development programmes and housing interventions (box 2.4).

Box 2.4 Examples of externalities

A number of potential external benefits have for instance been associated with education, to name but one highly relevant social determinant of health. Those benefits can be economic or non-economic. Economic benefits may arise in the employment sector, where modern production techniques involve often close collaboration within teams. People who have invested more in their education will increase not only their own productivity but also that of their fellow workers. Non-economic benefits of education may arise from the socialization function of education that may benefit society at large, rather than just the individual. By contributing towards a common standard of citizenship, education will tend to produce a degree of social cohesion that is in most people's interests. For instance, crime may fall and child rearing may improve in more educated communities. (A contrary view is that in some cases education may also lead to the questioning of accepted practices, which in turn may lead to social unrest that governments may respond to in a repressive manner.)

A number of external benefits are associated also to other social determinants of health. For instance, social protection schemes, such as unemployment benefits and requalification programmes, support individual income during unemployment spells, allowing the beneficiaries and their families to maintain adequate nutritiwon, shelter and health care. At the same time they can also benefit society at large because they counter the development of a black economy, to which the unemployed might look for prompt support. These benefits to "society at large" lead to the discussion of intangible public goods, such as social cohesion and social capital. Methods are available to measure these latent traits of societies, for example survey questionnaires and proxies for latent variables. Tracking social capital is important for understanding how these intangible public goods are being damaged or enhanced by decisions taken for or against government intervention.

Enhancing energy efficiency of buildings allows adequate heating of a family's home and at the same time contributes to reduced emissions and pollution, to the benefit of the entire neighbourhood.

Early child development interventions, such as preschool education and kindergarten services, alleviate parents of a part of their duties and help especially mothers re-enter the labour market.

As already mentioned, traditionally costs borne by all members of a household were considered "internal", and hence not policy relevant. Each family member was implicitly assumed to have identical preferences, or the household head was assumed to have incorporated all preferences of other family members into his or her behaviour and consumption choices. (Other household members were assumed to have "bargaining power" that ensured consideration of their preferences, certainly a problematic assumption, particularly in the case of children.)

But this view is changing (although, empirically, this is a very challenging concept to test). Short of making a decision on where exactly to draw the line between internal and external costs, Sloan et al. (*3*) have split the external costs of smoking into traditional external costs and quasi-external costs; the costs borne by household members who are not participating in the choice are called "quasi-externalities" and may justify intervention, as they tend to be larger than the external costs borne by wider society.

Quasi-externalities, the consequences of an individual's poor health decisions for other family members, can be manifold. An alternative view is that costs borne by household members other than those engaging in unhealthy behaviours should be considered as external. Because a large share of the costs of smoking and other unhealthy behaviours occur within households, adding these costs to any external cost estimate will greatly increase the external costs and thereby reinforce the rationale for government intervention (*3*). Very few studies, however, have tabulated this cost component.

"Classical" externalities are derived from collectively financed programmes, such as health, disability and life insurance; pensions; and sick leave. These programmes are financed by taxes and premiums that commonly do not differentiate between people who engage in unhealthy behaviour and those who do not. From a broad, societal perspective some of these programmes tend to incur external costs and others external benefits, so the issue of whether smokers, heavy

drinkers or those engaging in other poor health habits "pay their way" becomes an empirical question. Other things being equal, individuals engaging in unhealthy behaviours doubtless incur higher health care expenditures than those who do not. Because those individuals tend not to pay higher premiums for health insurance, which would reflect their higher health care costs, many costs generated by their unhealthy behaviours are borne by the other contributors to the insurance.

However, people with poor health habits tend to die younger, possibly as a result of lower socioeconomic position, reducing the number of years they require financial support from collectively financed programmes. Several studies have shown this effect of early death to be potentially large: it can outweigh the external costs represented by increased health insurance costs, and it can outweigh the loss of tax and premium payments (which finance many of these programmes). Contrary to popular belief, on a net financial basis society does not always "subsidize" people with poor health habits.

2.2.3 Public goods

Public goods are defined by economists as goods that are characterized by non-excludability and non-rivalry (*4*). The first condition refers to the impossibility of excluding anybody from consuming the good in question. The second condition refers to the fact that the consumption by one individual does not reduce the possibilities of consumption by any other individual. An example helps clarifying the meaning of these two conditions: street lighting is a public good because no one can be excluded from benefiting from it once it is provided and one person's consumption does not reduce the amount of good available to anybody else.

The essence of a public good is that it is impossible to make someone pay for it. Indeed, any individual can consume the good without paying its price (due to its non-excludability). Furthermore, non-rivalry implies that, once a public good is provided, it is not scarce. As scarcity is the fundamental determinant of market prices, functioning markets are not able to provide public goods and government intervention is required. Admittedly, few goods are pure public goods. Many more are imperfect public goods, meaning that they are either approximately non-excludable or non-rival. Information, for instance, is an imperfect public good whose importance cannot be understated. It is non-rival, but it is excludable only to some extent. Consider the case of information about the mechanisms of transmission of human immunodeficiency virus (HIV). Producing this information is costly, because it needs researchers, laboratories and specific investments. Consumers realize that once such information is produced they will be able to obtain it for free via a range of media. Therefore they are not willing to pay and contribute to financing the production of this information. Governments can substitute markets and overcome this failure. By exploiting their power of coercion, governments can tax citizens and raise enough resources to finance research and provide its result to all citizens.

As regards social determinants of health, often knowledge of the costs and especially the benefits of education are not prevalent across the whole population. Absence of this knowledge, even though it is available, is typically more pronounced among the less well off and at least in part explains why the children of poorly educated parents tend to invest relatively little in education. Generating this information requires investments in research but once that investment is made, the dissemination and acquisition of this information is marginally less costly. As with HIV/AIDS, this makes the case for government intervention to ensure appropriate knowledge is generated and made available so that not only those who are educated are able to take advantage of these public goods. The same can be said about the costs and benefits of new technologies of mobility and construction and about the benefits of a well-balanced and appropriate diet.

2.2.4 Departures from rationality

The assumption that people act rationally (that is, maximize their expected utility) represents a core pillar of economic thought that allows economists to derive "optimal" behaviour in a normative sense. Models of rational behaviour can also explain and predict actual behaviour. It is as fundamental an assumption as the "reasonable person" is within the application of the law. Most economists would not approve dismissing the rationality assumption altogether, not least because doing so would open the way to paternalism in a broad range of areas, under the pretext of "helping people do what is best for themselves".

Nevertheless, economists do recognize that in the specific case of children and adolescents, the rationality assumption does not hold. Children and adolescents tend

not to take the future consequences of their choices into account, irrespective of whether they are informed of future consequences. They act "myopically" and, hence, non-rationally (*5*).[3] Their choices may well conflict with their long-term best interests. This provides, in principle, a justification for government intervention: to prevent them from harming themselves when they do not fully appreciate the consequences. Here, we do see privately borne costs that are relevant to public policy.

Government intervention to prevent myopic behaviours is particularly relevant when decisions or behaviours in childhood and adolescence have long-lasting impacts. This affects important social determinants of health areas such as education, and it is particularly obvious in the consumption of addictive goods, especially tobacco. Smoking behaviour is overwhelmingly established in adolescence. Some 80% of adult smokers in the United States reportedly started smoking before the age of 18 (*6*). Young people do not take into account the risk of becoming addicted to nicotine (again, even if informed of future consequences). Even without addiction, empirical evidence strongly suggests that health behaviours, for example concerning diet and physical activity, adopted while young are reliable predictors of such behaviours in adulthood (*7–9*).

Key messages: standard efficiency rationales

- Standard welfare economics acknowledges that free market outcomes do not always deliver the most efficient outcomes, due to the aforementioned market failures. They are called the "standard" efficiency-based market failures because they have commonly been discussed in the traditional welfare economics literature in many public policy contexts.
- Related to efficient market preconditions or assumptions, there are typically four potential sources of market failure:
  - > imperfect or asymmetric information
  - > externalities
  - > public goods
  - > non-rational behaviour.
- Efficient market preconditions or assumptions:
  - > Information problems are acute for a number of markets involved in the provision of some social determinants of health.
  - > Individuals tend not to factor external effects into their consumption choices.
  - > Traditionally, all costs borne by household members were considered internal but there is a growing recognition of the need to include quasi-externalities in costings.
  - > Quasi-externalities refer to intrahousehold impacts of choices of a single member, particularly in the case of children, as a highly vulnerable group.
  - > Several studies show that early death may outweigh any externalities for society. Contrary to popular belief, on a net financial basis society does not always subsidize people with poor health habits.
  - > Public policy has a role in ensuring the distribution of health-related information in the population as a public good.
  - > Although a core pillar of economics is that people act rationally, economists do realize that in large groups of populations, in particular children and adolescents, the rationality assumption does not hold. Children and adolescents tend not to take the future consequences of their actions into account – the so-called "departure from rationality" phenomenon.

[3] Consumers are considered "myopic" if they ignore the effects of current consumption on future utility when they determine the optimal or utility-maximizing quantity of an addictive good in the present. In technical terms, their discount rate is infinite. Some authors define myopic individuals as those that have a very high discount rate and attribute very little value to future consumption. In that definition, myopic behaviour can still be rational (as long as the discount rate does not become infinitely high). Here myopia is defined as irrational behaviour, in line with for instance Pearce and Nash (*5*).

2.3 Non-standard economic rationales: behavioural economics

A new paradigm is slowly emerging in economics in response to the notion that assuming a sovereign, rational and always well-informed consumer may not in all instances help understand and predict people's decisions and behaviour in daily life. The new approach, largely subsumed under the heading of behavioural economics, offers a different or broadened set of rationales for why governments may be justified in interfering with individual decisions in general and in social determinants of health areas in particular. While the traditional perspective may have been that essentially all behaviour can be "rationalized" (ex post explained as rational), the behavioural economics view of the world holds that there are situations in which people act with "bounded rationality" (*10*).[4] In real-world decision-making, individuals have limited information about the possible alternatives involved in a choice problem and have insufficient computational ability to evaluate and rank all alternatives. These limitations bound the individual's process of maximization and force people to chose options that are only satisfactory, rather than optimal (*11*). When the choice is particularly complex people adopt simplified procedures, based on habits or norms that simplify the task and guide behaviour, sometimes resulting in outcomes that are even counter to their fundamental interests.

One important feature of this bounded rationality is the idea of "time-inconsistent preferences" or "hyperbolic discounting", which results in individuals accepting instant gratification at the expense of their long-term best interests. In this model, a commitment made today – by a perfectly informed and rational individual who has time-inconsistent preferences – to act in a particular way in the future will be reneged upon at the point when the commitment should be respected. For example, a smoker asked today to stop smoking immediately will probably answer no, but might agree to stop smoking in one year. One year from now, if asked again to quit smoking, the smoker might prefer to continue smoking rather than adhere to the previous commitment to quit. As time progresses, each future date comes into the present and the preference for immediate enjoyment will prevail. In other words, the present "self" of the individual disagrees with his or her future "self". As the decisions of the present self do not take into account the consequences of its actions on the future self, it imposes a type of externality on the future self. This is typically called an "internality" (or "intrapersonal externality") because the consequences remain "inside" the individual. The potential relevance of time-inconsistent preferences probably extends in particular to those social determinants of health that involve some kind of cumulative investment to begin at younger ages (such as education, participation in elective health insurance or pensions schemes) and could be influenced by time-inconsistent preferences (*12, 13*). Indeed, those individuals biased towards the present would prefer to reduce investment to be able to consume more and obtain an immediate pleasure. The result would be underinvestment in education, and late entry in welfare programmes or the use of health services.

Key messages: behavioural economics

- Behavioural economics respond to the emerging notions in economic theory, fuelled too by neuroscience, psychology and other social science disciplines, that citizens and consumers do not always behave rationally because they operate in situations where they have bounded rationality – or limited information on a set of choices and insufficient computational powers to choose the optimal alternative.
- The result is that people experiencing bounded rationality are likely to underinvest in education and make late entries to welfare programmes, including the utilization of health care.
- These irrational behaviours generate certain costs for society that can potentially be avoided through specific actions or interventions.

[4] O'Donoghue and Rabin (*10*), representatives of the behavioural economics position, emphasise that "economists will and should be ignored if we continue to insist that it is axiomatic that constantly trading stocks or accumulating consumer debt or becoming a heroin addict must be optimal for the people doing these things merely because they have chosen to do it".

2.4 Equity-based rationale for public policy intervention

Equity concerns have been gaining relevance in recent decades in policy-related research and practice. This process has been partly driven by the confirmation of large social inequalities within and between countries, which have persisted and in some cases increased throughout the 20th century even in high-income countries that have introduced universal programmes of health care, education and social protection against poverty. These social inequalities include inequalities in health, education and political participation, as well as inequalities in income and wealth. But what is meant by equity? And why is it important from a policy-making perspective?

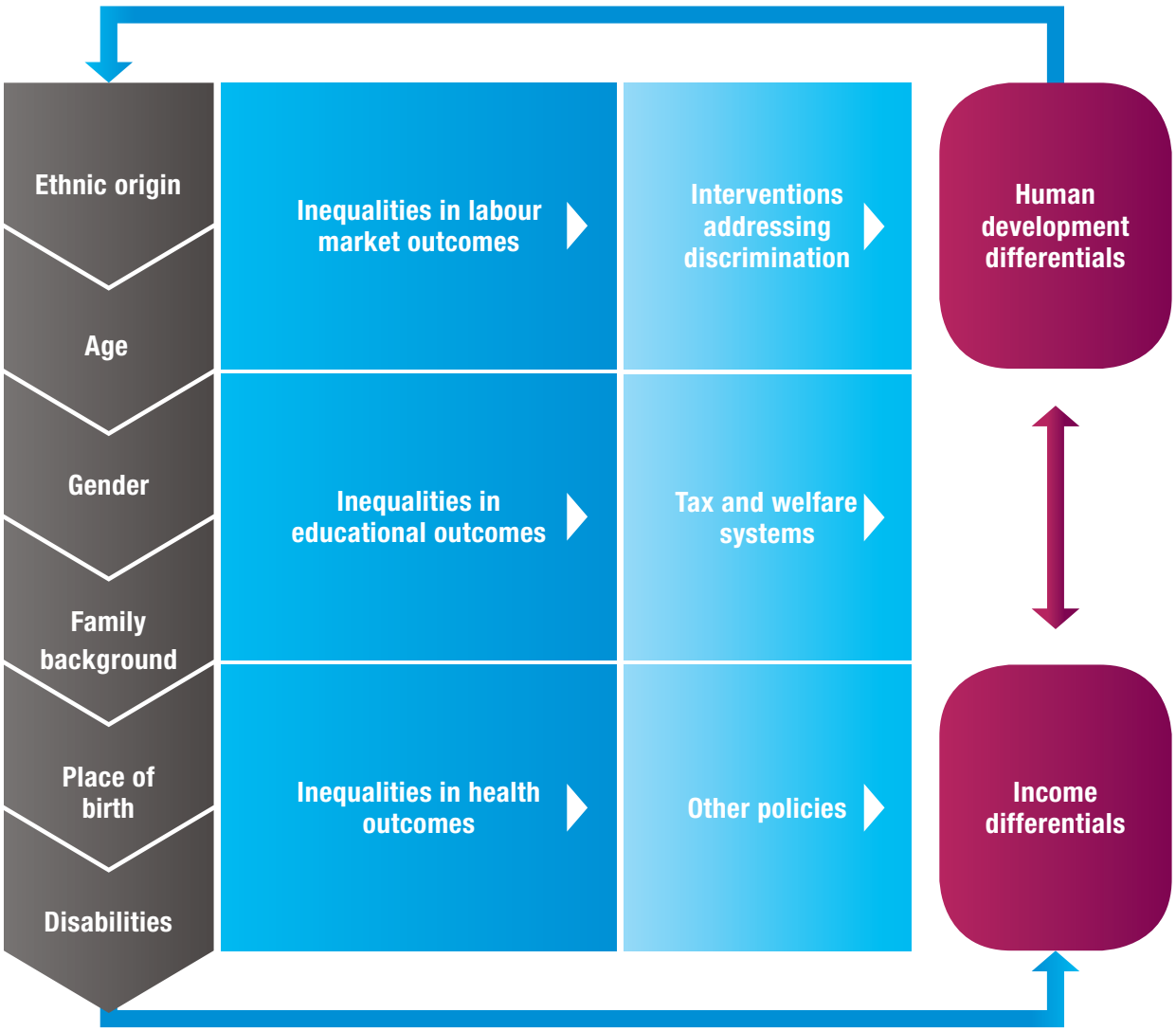
Equity and equality are related but different concepts. Equity is necessarily an ethical concept, to do with social justice or fairness. By contrast, equality can be thought of as a factual concept, to do with the degree of "sameness" of people in some relevant respect. In principle, inequality between individuals in the distribution of their income or health or any other variable of interest can be defined as a purely mathematical property of that distribution, without necessarily making social value judgements about how far inequality is "unjust" or "unfair". By contrast, inequity cannot be defined without making social value judgements about justice. Achieving equity would require a fair distribution of resources. The concept of equity or social justice is very broad, and does not have to focus exclusively on variation in the distribution of income or health or some other good or bad outcome. In particular, there may be concerns about "procedural justice" in the social and economic processes that lead to a particular distribution, as well as concerns about variation in the resulting distribution. The concept of equity is complex, and draws on myriad ideas of social justice or fairness from different and long-standing religious, philosophical and political traditions. The importance of the concept of justice in history reflects a deeply rooted concern for fairness among people in all societies and cultures (*14*).

Traditionally, most inequality research has focused on inequality in outcomes, and particularly on economic inequalities. In recent years, however, there has been a shift in theory and practice towards a more multidimensional and broader concept and definition of inequality. This change has been based on the intuition and progressive demonstration that the analysis of economic inequalities cannot be easily disentangled from inequalities in other outcomes. Figure 2.1 illustrates the relationships between inequality in different social and economic dimensions, which can be transmitted between generations and are also affected by such factors as gender or ethnic origin. These relationships are mediated by the institutional and policy setting, which has the potential to counteract initial inequalities, thus helping to equalize outcomes and break intergenerational transmission cycles whereby disadvantage is passed down from parent to child.

A currently widely accepted concept of justice is that of "substantive equality of opportunity". Substantive equality of opportunity refers to the idea that individuals should have the same opportunity to achieve outcomes such as high income or a long life, but do not necessarily need to achieve the same outcomes due to freedom of choice. Substantive equality of opportunity is a stronger concept than formal equality of opportunity, which focuses on non-discrimination in social and institutional processes. For example, a highly educated person and a poorly educated person may have formal equality of opportunity in the process of applying for a well-paid job, but not substantive equality of opportunity to succeed in getting the job.

A body of economic theory has now been developed to define and measure substantive equality of opportunity, drawing on the "liberal-egalitarian" tradition of political theory that followed Rawls classic 1971 work, *A theory of justice* (*15*). In this economic theory, the outcome that each individual achieves is the result of two ingredients: circumstances (family background, endowments, exogenous shocks); and individual effort, or other variables under personal responsibility (*16*). Inequalities due to circumstances are unfair and should be eliminated as much as possible, while inequalities due to unequal effort should be considered acceptable. Measuring inequality of circumstances is not an easy task. There is no unique indicator, and the amount of data is quite challenging, given that all circumstances need to be observed. Bourguignon et al. (*17*), among others, proposed a strategy to decompose income inequality due to circumstances and income inequality due to effort based on regression methods.

Figure 2.1 Relationships between different dimensions of inequality



Arguably, achieving substantive equality of opportunity is easier than achieving equality of outcome. In theory, achieving equality of opportunity could be done by redistributing the inherited economic endowments of each individual, and may not require continuous intervention by the government at all stages of the life course. The "market distortions" induced by redistributing inheritances could then be relatively moderate – compared to taxing and regulating economic activity across the life course – and so a social consensus to achieve equality of opportunity could in theory be easier to obtain. In practice, however, there are substantial political constraints on imposing high inheritance taxes in the face of opposition from prosperous voters with much to lose, substantial possibilities for avoiding high inheritance taxes by giving away or squandering private wealth, and although financial wealth can be taxed it is hard to prevent people from passing on the non-financial advantages of "good parenting" to their children – at least not without collectivizing the care of children to an extent that most societies would consider unacceptable.

Governments and international organizations have progressively embraced the principle of substantive equality of opportunity. The World Bank, for instance, has developed and started using a Human Opportunity Index as one of the relevant indicators to assess social, human and economic development aspects in Latin America (*18*), and is currently expanding its use to other regions, for example the Middle East and North Africa. The 2010 *Human Development Report* background research paper *Designing the Inequality-Adjusted Human Development Index (IHDI)* also proposed a modification to the methodology used to adjust the Human Development Index for inequality in the distribution of each dimension (health, knowledge and income) across populations (*19, 20*).

The measurement of equality of opportunity, however, poses particular challenges. In the socioeconomic literature it has been common to study equality of opportunity through correlation of intergenerational income and educational or health outcomes (*21*) or whether the children's income is correlated with their parents' socioeconomic, educational or health status. Most studies to date show that parental background has a strong influence on an individual's outcomes. Tomes (*22*) finds that for poor families, family income has an important effect on child's educational attainment. Shea (*23*) finds that parental income is an important determinant of children's income for poor families even after controlling for genetic transmission of ability.

A fairly recent body of literature in behavioural economics sheds some light on shared human preferences for fairness and justice, on the basis of numerous experimental studies. As argued by Fehr and Fischbacher (*24*), for example, people behave in ways clearly inconsistent with the rational self-interest hypothesis, as they regularly show a willingness to engage in "altruistic rewarding" (a propensity to reward others for cooperative, norm-abiding behaviour) and "altruistic punishment" (a propensity to impose sanctions on others for norm violations) (*14, 25, 26*).[5]

In addition to experimental evidence, other studies provide support to the view that people tend to assign a positive value to fairness. A recent study of European nations and the United States that relied on individual answers about perceived happiness and on objective income inequality measures found that "individuals have a lower tendency to report themselves happy when inequality is high, even after controlling for individual income, a large set of personal characteristics, and year and country … dummies" (*27*). Another recent analysis of several Organisation for Economic Co-operation and Development (OECD) countries based on data from the International Social Survey Programme constructed a proxy measure of cross-national attitudes towards income inequality. Osberg and Smeeding (*28*) found that citizens of most high-income countries appear on average to have similar attitudes towards inequality, generally thinking that less well-paid professions should be paid more and that better-paid professions should be paid less (*14*). The World Values Survey[6] results confirm that a large share of people regardless of their background have a preference for equity (tables 2.1 and 2.2).

[5] A classic example of this behaviour is represented by the Ultimatum Game, in which a player (the proposer) is asked to suggest a one-time division of a certain sum of money between himself or herself and another player, and this one (the responder) must accept or reject it. Although standard game theory predicts a unique equilibrium where the proposer offers the smallest possible amount and the responder accepts it, evidence across hundreds of experiments in highly heterogeneous cultural circumstances and with different amounts show that offers are substantially higher and, even so, rejections are often observed (*25, 26*). When the responder can choose between different proposers with all non-chosen proposers getting zero, a Nash equilibrium where all proposers offer the full amount or close to it is reached. This finding suggests that a sizeable fraction of human beings in most societies care not only about their own individual opportunities and outcomes but also about "fairness" (*14*).

[6] The World Value Survey is a multicountry survey of individuals designed and sponsored by the Inter-university Consortium for Political and Social Research, based at the University of Michigan. The survey aims to "enable a cross-national comparison of values and norms on a wide variety of topics". Four main waves have been fielded since the early 1980s.

Table 2.1 Preferences on income equality

Preference	Percentage
Income should be made more equal	14.1
2	4.8
3	7.1
4	6.3
5	12.9
6	8.4
7	10.6
8	13.2
9	6.9
We need larger income differences as incentives	15.7

Table 2.2 Importance of eliminating big income inequalities

Preference	Percentage
Very important	31.6
2	26.9
3	24.8
(not/less important)	9.3

Source: World Values Survey, 2008.

Key messages: equity-based rationales

- Inequity cannot be defined without making social value judgements about justice. Achieving equity would require a fair distribution of resources.
- The concept of equity or social justice is very broad, and does not have to focus exclusively on variation in the distribution of income or health or some other good or bad outcome. In particular, there may be concerns about "procedural justice" in the social and economic processes that lead to a particular distribution.
- A widely accepted concept of justice is that of "substantive equality of opportunity". Substantive equality of opportunity refers to the idea that individuals should have the same opportunity to achieve outcomes such as high income or a long life, but do not necessarily need to achieve the same outcomes due to freedom of choice.
- There is evidence from survey data, for example the World Values Survey, showing that most people today tend to value substantive equality of opportunity rather than equality of outcomes.
- Substantive equality of opportunity is a stronger concept than formal equality of opportunity, which focuses on non-discrimination in social and institutional processes.
- Governments and international organizations have progressively embraced the principle of substantive equality of opportunity. The World Bank, for instance, has developed and started using a Human Opportunity Index as one of the relevant indicators to assess social, human and economic development aspects in Latin America, and is currently expanding its use to other regions, for example the Middle East and North Africa.

2.5 The relationship between efficiency and equity

2.5.1 The standard viewpoint

A standard view in economics is that there exists a trade-off between efficiency and equity. The part of the standard neoclassical economics that is known as welfare economics looks initially at efficiency and is not concerned with equity. Its main result states that under the condition of market perfection and individual rationality, any market equilibrium produces an efficient allocation (or distribution) of resources. Also, very unequal distributions are seen as efficient if they are obtained as a market equilibrium. In this context the neoclassical economist cannot prefer one efficient outcome over another, because of the Pareto criterion: moving from an efficient outcome to another implies that at least one individual will be worse off. From society's standpoint, the choice within the set of Pareto efficient outcomes is ultimately a political decision. Depending on the political institutions, there exists a way to aggregate individual preferences (voting in democratic countries) and decide what distribution of resources corresponds to the criterion of justice the society has adopted. When this target distribution has been defined, then the neoclassical economist can propose strategies to converge towards the benchmark. Unfortunately, any government intervention aimed at redistributing resources (except for lump sum taxes) in a perfect market economy produces inefficiencies, because it distorts individual choices, which are deemed to be completely rational. In this context, with all assumptions holding, redistribution is costly and produces efficiency losses. This is the source of the discussion of a trade-off between efficiency and equality that characterizes traditional neoclassical economics.

The trade-off between efficiency and equality certainly exists under the conditions of rationality and market perfection. However, the ideal setting of perfect markets should not be considered as the ultimate description of how the economic system actually does or can work. Rather it has to be considered as a useful reference that can be taken to measure how distant the actual situation is from its optimum, its so-called "first best". Neoclassical economists are well aware that the optimum will never be reached because the problems of incomplete or asymmetric information (that are the primarily responsible for the crucial failures of capital and insurance markets), externalities, public goods and limited rationality will never disappear. Indeed, economists have studied in depth the deviations from the first best scenario that occur in settings where markets are incomplete or where economic relations occur under asymmetric information. When the more realistic assumption of incomplete or imperfect markets is made, the negative conclusion about the role of governments and redistribution policy changes dramatically. It might even become possible that redistribution is an effective strategy to counter market failures and promote efficiency.

2.5.2 The standard viewpoint: when is it less valid?

In the context of imperfect markets, the unambiguous result that redistribution is certainly costly does not hold. A redistributive policy might produce efficiency gains and efficiency losses that ought to be carefully and pragmatically evaluated. Whenever the former exceeds the latter, redistribution should be carried on. This does not mean that redistribution is inexpensive under imperfect markets but only that the efficiency gains attainable by means of income redistribution more than offset the efficiency costs of redistribution. Whether to undertake redistribution or not depends on the kind and relevance of market imperfection, so that any judgement should be made on a case-by-case basis. This is not the end of the story though. If after careful evaluation redistribution is found to cause an efficiency loss, the case for redistribution might still be made. If the society is ready to sacrifice some efficiency to achieve a more equitable distribution of resources, this would be an entirely defendable strategy from an economic perspective. The only concern of neoclassical economists will be how to achieve this result of a more equitable distribution of resources at the minimum cost.

Summing up, the idea of the trade-off between equality and efficiency is likely to have been overemphasized. In reality, neoclassical economics indicates that redistribution does have a price but that sometimes this price is worth paying and sometimes not. If there is a political decision to pay the price, neoclassical economists will

(understandably) want to find the least costly strategy to reach that goal. The income distribution obtained through the workings of the market might not be the one that maximizes social welfare. In other words, the social preference for equity prevailing in society might be different to the one produced by the market.

2.5.3 The macroeconomics viewpoint: traditional and new evidence

At the macroeconomic level, the traditional, neoclassical economic view emphasized the potential beneficial effects of income inequality on savings, investment and incentives (*29*). Based on this, theorists and practitioners have consistently argued that some level of income inequality was necessary and desirable for economic efficiency's sake, and thus that a certain trade-off between economic growth and inequality was to be accepted. Forbes (*30*) in this sense found that an increase in inequality tended to raise growth during the subsequent period. Banerjee and Duflo (*31*) concluded in turn that changes in inequality in either direction led to lower growth in the subsequent five-year period. They interpreted this finding as supportive of the notion that redistribution hurts growth, at least over short- to medium-term horizons.

In the past two decades, however, a growing body of research has identified new channels between inequality or equity and growth. This new evidence suggests that income inequality can have disruptive effects on resource allocation that can be damaging for economic growth. Recent studies have found that when growth is looked at over the long term, the trade-off between efficiency and equality may not exist (*32*). The groundbreaking *World Development Report 2006*, on equity and development, makes in this sense a strong argument in favour of interventions targeting inequities (*14*). In summary, the report concludes that by ensuring that outcomes are determined by talents and efforts rather than predetermined circumstances, convergence of the goals of equity and efficiency can be achieved. First, with imperfect markets, inequalities in power and wealth translate into unequal opportunities, leading to wasted productive potential and to an inefficient allocation of resources. Second, economic and political inequalities are associated with impaired institutional development. The report provided various pieces of evidence on these connections in the developing world. This conclusion has been later confirmed by further evidence across countries in different development stages, suggesting that equality appears to be an important ingredient in promoting and sustaining growth (*33, 34*).

A number of studies have demonstrated that an economy's growth path can depend on parameters of the initial distribution of income (see Ravallion (*35*) for a review of the recent literature). The parameter that has received most attention is income inequality. When income is distributed unequally, the poor have little collateral and are thus excluded from the credit markets. This implies that potentially profitable and growth-enhancing business ventures or investment in physical and human capital are left untapped (*36–38*). Alternatively, inequality might prompt distortionary policy responses (*39*), or efficiency-enhancing reforms can be blocked.

Two other indicators of how income is distributed are the size of the middle class and the poverty rate. Easterly (*40*) finds evidence that a larger income share controlled by the middle three quintiles promotes economic growth because a strong middle class fosters entrepreneurship, shifts the composition of consumer demand towards mass products promoting domestic industrial development, or makes it more politically feasible to attain policy reforms and institutional changes conducive to growth. Ravallion (*35*) shows that higher current poverty incidence yields lower growth when the poor are subject to a borrowing constraint. Poverty might reduce growth because it leads the poor to adopt very costly survival strategies that prevent them from improving their condition by means of profitable investment opportunities and trap them into poverty.

This evidence suggests that under imperfect markets (especially imperfect credit markets) income distribution is a determinant of economic growth and there is a case for government redistribution. Note that this intervention is however motivated by efficiency reasons (promote growth) rather than by a concern for equality per se. Recently Sala-i-Martin and Pinkovskiy (*41*) have shown that in Africa (supposed to be the continent lagging most as regards the process of poverty reduction, especially if compared with Asia and Latin America), since the mid 1990s economic growth and poverty reduction went hand in hand in all countries except those at war.

More recently, a consensus seems to have emerged around the argument that growing income inequalities within countries over recent decades may have played a role in the current financial and economic crisis. Many theorists and practitioners from different disciplines have warned that widening income gaps between the minority 1–5% population at the top of the income distribution and the rest across countries is one of the driving factors of the crisis (*42–46*). According to different analyses, the increased demand for consumer borrowing to finance desired consumption to keep up with those whose earnings were rising faster was the main originating factor (*46–49*). Others conclude that the impact on aggregate demand of the redistribution from households with high propensity to consume to households with a lower propensity to consume was a determinant (*46, 48*).

Although rigorous research is still lacking, evidence on the role played by growing inequalities in the generation of the crisis is increasing. A recent OECD report (*50*) points to growing income inequalities as a potential factor driving the current crisis. The study confirms that over the two decades prior to the onset of the global economic crisis the household incomes of the richest 10% grew faster than those of the poorest 10% across countries. The Gini coefficient stood at an average of 0.29 in OECD countries in the mid-1980s. By the late 2000s, however, it had increased by almost 10% to 0.316. The increases in household income inequality have been largely driven by changes in the distribution of wages and salaries. With very few exceptions the wages of the 10% best-paid workers have risen relative to those of the 10% lowest paid. In this sense, another recent International Labour Organization (ILO) report highlights that the income gap between the top and bottom 10% of wage earners increased by 70% in the countries for which data exist, and the share of wages over the total income declined over the last two decades. Similar trends were observed for other dimensions of income inequality, including labour income vis-à-vis profits, or top wages vis-à-vis low-paid workers' wages (*51*). On the other hand, Atkinson and Morelli (*52*) argue in their assessment of the relationship between inequality and the banking crisis that a clear linkage cannot be identified in history across OECD countries.

Despite the growing amount of work that suggests a positive association between income equality or equity and economic development, the immediate role for policy is yet not clear. More inequality may shorten the duration of growth and induce crisis, but poorly designed efforts to reduce inequality could be counterproductive, distorting incentives and undermining growth. In this sense, the reforms that prompted growth in China involved giving stronger incentives to farmers. Although this probably led to an increase in inequalities among farmers, it also resulted in an increase of the income of the poor and reduced overall inequality as it gave a tremendous spur to growth (*53*). The studies being currently carried out on the role that economic inequality or inequities have played in the recent crisis will provide further insights on these issues. If they confirm that growing inequality was one of the originating factors, this would doubtless become a major additional argument for public interventions aimed at reducing inequity.

Regardless of the economic implications of this debate, it must be noted that some policy interventions can evidently address both equity and efficiency concerns at the same time. As highlighted by Weimer and Vining (*54*), there are efficient policies that can lead to equitable outcomes, and interventions based on equity arguments that lead to increased efficiency. This effect is known as the "double dividend". Sometimes targeting disadvantaged groups in general may carry with it higher levels of efficiency because of larger marginal effects of interventions on the disadvantaged rather than the overall population. This can be the case with for instance drug treatment programmes. Along the same line, and as argued by Heckman and Masterov, "investing in disadvantaged young children is a rare public policy with no equity–efficiency trade-off. It reduces the inequality associated with the accident of birth and at the same time raises the productivity of society at large" (*55*). In this sense Heckman and Masterov make the case by reviewing substantial evidence that these children are more likely to commit crime, have out-of-wedlock births and drop out of school (*56*).

The "double dividend" effect has additionally been discussed in the literature evaluating the impact of certain interventions aimed at improving gender equality in the labour market or environmental policies. It has been found that affirmative interventions establishing

quotas for women in competition situations can have a positive effect on the willingness of women to expose themselves to a competitive situation while bearing no negative effects on the efficiency of selecting the best candidates (*57, 58*). Although the conclusions in the literature are mixed in this regard, double dividends are also often associated with environmental policies combined with other interventions that in turn promote new economic growth and employment (*59*). In this sense, the ILO *World of Work Report 2009* shows that if a price was imposed on carbon dioxide emissions, and if the resulting revenues were used to cut labour taxes, then employment would rise by 0.5% by 2014. This is equivalent to over 14.3 million net new jobs for the world economy as a whole (*60*). Other studies have found that environmental taxes can produce significant efficiency gains by reducing the costs of the tax system, besides the environmental (and health) benefits associated with them (*61*). In addition, country-specific studies have confirmed the multiple potential benefits of environmental policies. Van Heerden et al. (*62*) found a triple dividend (decreasing emissions, increasing gross domestic product (GDP) and decreasing poverty) for South Africa if environmental taxes are recycled through a reduction in food taxes.

The conclusion that can be derived from the available evidence is that a direct government investment in social determinants of health, undertaken on equity grounds, may not necessarily produce efficiency losses. The underlying trade-off between efficiency and equality predicted by the standard textbooks of economics is unlikely to dominate the efficiency benefits that the government intervention could achieve in a context of imperfect markets, where redistribution policies are able to prevent situations of market failure.

Key messages: equity and efficiency trade-offs and win-wins

- A standard view in economics is that there exists a trade-off between efficiency and equity. The part of the standard neoclassical economics that is known as welfare economics looks initially at efficiency and is not concerned with equity. Its main result states that under the condition of market perfection and individual rationality, any market equilibrium produces an efficient allocation (or distribution) of resources.
- In the context of imperfect markets, the unambiguous result that redistribution is certainly costly does not hold.
- At the macroeconomic level, the traditional, neoclassical economic view emphasized the potential beneficial effects of income inequality on savings, investment and incentives.
- New evidence suggests that income inequality can have disruptive effects on resource allocation that can be damaging for economic growth. Over the long term, the trade-off between efficiency and equality may not exist.
- This evidence suggests that where markets are imperfect, income distribution is a determinant of economic growth and there is a case for government redistribution. This intervention is however motivated by efficiency reasons (promote growth) rather than by a concern for equality per se.
- More recently, a consensus seems to have emerged around the argument that growing income inequalities within countries over recent decades may have played a role in the recent financial and economic crisis.
- Regardless of the economic implications of this debate, it must be noted that some policy interventions can evidently address both equity and efficiency concerns at the same time. There are efficient policies that can lead to equitable outcomes, and policies or interventions based on equity arguments that lead to increased efficiency. This effect is known as the “double dividend”.

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CHAPTER 3. Assessing value for money of interventions

The presence of an economic justification for government to "do something" does not complete the economic argument. What is needed in addition is the evidence that if only something is done, then the "benefits" (appropriately defined) at least outweigh the "costs" (also appropriately defined) of the intervention. This chapter discusses precisely those two key steps involved in undertaking a "value for money" assessment: how do we arrive at cost and benefit estimates of social determinants of health interventions? As will become clear, in particular the assessment of the benefits poses important challenges that researchers and policy-makers need to be aware of when using and requesting such evidence.

3.1 Valuing the consequences of social determinants of health interventions

Applied welfare economics provides a strong conceptual foundation for economic evaluations of social determinants of health interventions. The common-sense idea is that such interventions yield benefits because they improve individuals' well-being. In economic terminology, these interventions increase individuals' utility, and social welfare is some aggregation of the utility levels of all individuals in a society (*1, 2*).[7] In cost–utility analysis, a form of cost–effectiveness analysis, health benefits are measured based on individual preferences for different health states, summarized in measures such as the quality-adjusted life year (QALY). In social cost–benefit analysis, social benefits are measured based on individuals' willingness to pay for the desired outcome. Both methods try to value health consequences: cost–effectiveness analysis uses a health metric while cost–benefit analysis uses a monetary one.

3.1.1 Valuing costs

Assessing value for money of social determinants of health interventions first of all requires measuring the costs of the intervention under consideration. The concept of costs in economic evaluation is based on the same fundamental principle as the concept of benefits: social determinants of health interventions create costs because they make some individuals in society unhappier. The link between those interventions and unhappiness, in turn, is the concept of opportunity cost. When resources are used in an intervention, they cannot be used in the production of other goods and services. Individuals who have had to give up the opportunity to consume these other desirable goods and services are less happy. Under conditions that often hold, the market prices of the resources used in a social determinants of health intervention will be a good measure of the opportunity costs. Standard references such as Boardman et al. (*3*) contain in-depth discussions of the challenges of measuring opportunity costs. Many of the challenges in measuring the costs of social determinants of health interventions are similar.

In a recent review, Weatherly et al. (*4*) suggest that measuring intersectoral costs poses special methodological challenges for economic evaluation of public health interventions. These costs pose the same challenges for economic evaluations of social determinants of health interventions. The challenges stem from the fact that such interventions often have wide-ranging impacts, so their costs may fall on individuals as well as on various parts of the public sector. Moreover, there may be ripple effects across different sectors. Weatherly et al. (p. 87) use an example that could be considered a social determinants of health intervention: "improvements in housing could reduce illness and injuries, with consequent reductions in health-care utilization." The goal of a complete economic evaluation is to value all of the changes in resource use caused by the intervention. A complete evaluation would take into account whether a housing improvement reduces (or increases) health care sector costs, while taking care to avoid double-counting costs or benefits.

[7] This framing of the problem adopts the welfarism approach, as distinct from the extra-welfarism approach, to welfare economics. Brouwer et al. (*1*) argue that one of the key distinctions is that welfarism focuses on individual utility outcomes; in contrast, extra-welfarism permits the use of other outcomes, such as Sen's (*2*) emphasis on individual capabilities. Brouwer et al. offer additional discussion.

Cost–utility analysis measures benefits in health units or utility associated with preferences for particular health states.

Cost–benefit analysis measures benefits in terms of the willingness to pay for a particular outcome.

Cost–effectiveness analysis relates the cost of an intervention to a common effect, measured in natural units, such as life years.

Cost savings estimates have rhetorical appeal in discussions of many public policies, including social determinants of health interventions. The cost savings approach focuses on the impact of the intervention on either costs in the health care sector or on public sector budgets. Cost savings are a component of the benefits of a social determinants of health intervention. However, there are no conceptual grounds for focusing solely on this component and neglecting the other ways an intervention may improve social welfare. Indeed, a narrow focus on the health care sector or public sector budgets can be quite misleading about the societal desirability of social determinants of health interventions. Various social determinants of health interventions that increase longevity might lead to higher lifetime health care costs, which in some countries will also mean higher public sector costs. For example, precisely because of the heavy burden of diseases related to tobacco use, tobacco control efforts could actually increase future health care costs. Clearly, social determinants of health interventions should not be judged failures because they are so successful in improving longevity that they increase lifetime health care costs. Instead, a complete economic evaluation (either cost–effectiveness or cost–benefit analysis) must be conducted to systematically compare all the costs and all the benefits of the intervention.

3.1.2 Cost–effectiveness and cost–utility analysis

Cost–effectiveness analysis and cost–utility analysis are widely used and accepted for economic evaluations of health interventions. Cost–effectiveness analysis relates the costs of an intervention to a simple, common effect, often measured in natural units. For example, an evaluation of the protocol of guaiac tests for colon cancer estimates the costs per cancer detected. Cost–utility analysis is a form of cost–effectiveness analysis where the effect or outcome of health interventions are measured in a common metric based on people's utility levels or preferences over different health states. Probably the most popular common unit of measurement is the QALY, but there are other variants, including the healthy year equivalent (HYE) and the disability-adjusted life year (DALY). Using a common metric allows comparisons of a wide range of interventions.

Cost–utility analysis is a very well-established method for the economic evaluation of health care interventions. It relies on stated-preference methods to elicit preferences over different health states. For example, in the standard gamble method, respondents are asked about their preferences between a gamble that might result in perfect health or death versus resulting with certainty in a suboptimal health state (such as a chronic illness). This and other methods are described in various standard references, including Gold et al. and Drummond et al. (*5, 6*). Because of the popularity of cost–utility analysis, there are now many estimates of QALY weights that measure preferences over a wide range of health states.

From the perspective of this review, an important weakness is that cost–effectiveness analysis and cost–utility analysis are hard to apply to the multiple impacts of social determinants of health interventions (*7*).[8] For example, a cost–effectiveness analysis or cost–utility analysis of the health effects of an early childhood intervention would have to somehow incorporate its additional value of reductions in delinquency and crime. Some research is moving the QALY approach in this direction. Dolan et al. (*8*) extend the QALY approach to incorporate the intangible victim costs of violent crime, estimating that a murder results in about 18 QALYs lost, while a serious wounding results in 0.19 QALYs lost. Dolan and Peasgood (*9*) further extend the approach to incorporate the costs of the fear of crime among potential victims.

[8] French et al. (*7*, p. 273) make a similar point about economic evaluations in addiction research, noting that "the variety and complexity of outcomes in addiction research … make it difficult to express economic impact through only one outcome, such as quality-adjusted life years (QALYs) gained".

Alternatively, the Institute of Medicine (*10*) in the United States proposes a method to apply cost–utility analysis to the analysis of regulations that yield both health and non-health impacts. This method calculates the comprehensive cost–utility analysis ratio as the cost net of health care cost savings and other benefits per QALY saved. To net out the other benefits, this method requires willingness to pay estimates for all the intervention's non-health impacts. Put differently, this method requires a cost–benefit analysis for all non-health impacts, which is then integrated into the QALY-based cost–utility analysis.

3.1.3 Cost–benefit analysis

Cost–benefit analysis is based on societal willingness to pay for the health improvements and other consequences of social determinants of health interventions. Like cost–effectiveness analysis, cost–benefit analysis relies on well-developed methods for estimating willingness to pay for health, especially mortality risks. One general approach is to use methods based on revealed preferences. Revealed-preference methods analyse market behaviour to infer willingness to pay for non-market outcomes. For example, analysis of workers' choices about job safety and wages provide the basis for estimating the marginal value of mortality risks, often summarized as the "value of a statistical life". More precisely, these studies estimate the dollar value people place on a small reduction in the risk of death. An example is useful to explain the terminology. Suppose a social determinants of health intervention in the housing sector improves safety and reduces the risk of accidental death, say by 1 in 10 000. If each of 10 000 people are willing to pay $600 for that risk reduction, on aggregate the net benefits of the risk reduction are valued at $6 million. Because the intervention can be expected (in a statistical sense) to save one life, this product is then called the statistical value of life. The same approach is also used to estimate willingness to pay to reduce the risks of on-the-job injuries (*11*).[9]

Instead of studying revealed preferences for health in labour and other markets, an alternative approach to estimate willingness to pay for health is to use stated preferences. Stated-preference methods use contingent valuation surveys that directly elicit willingness to pay for non-market outcomes, including health. The methodology of contingent valuation surveys has been extensively studied and refined. Much of the research on the contingent valuation method concerns the application of the method to value environmental quality. In an important legitimization of the method, a "blue ribbon" panel of social scientists convened by the United States National Oceanic and Atmospheric Administration concluded that the contingent valuation method could provide useful estimates for the assessment of damages to natural resources (*12*). Standard references such as Boardman et al. (*3*, chapter 14) provide in-depth discussions of the contingent valuation method and its strengths and weaknesses.

An important advantage of cost–benefit analysis over cost–utility analysis is that it is in principle straightforward to apply to the multiple impacts of social determinants of health interventions (*13, 14*).[10] The potential impacts of those interventions on social welfare include improvements in life expectancy, health-related quality of life, cognitive development, behaviour and social competence, educational attainment and earnings, and reductions in delinquency and crime. Economic methods

[9] The extensive research on the statistical value of life is reviewed and summarized in Viscusi and Aldy (*11*). They review more than 60 studies that provide estimates of willingness to pay to reduce mortality risks and about 40 studies that provide estimates of willingness to pay to reduce the risks of injuries. Estimates of willingness to pay to reduce mortality risks are available for at least 10 countries. These estimates are directly relevant to the health benefits from various social determinants of health interventions.

[10] Homer et al. (*13*, p. 536) reach a similar conclusion about economic evaluation methods in addiction research. They argue that cost–benefit analysis is best suited to capture the societal benefits of substance abuse treatment, such as reduced criminal activity. Zavala et al. (*14*) provide a detailed discussion of cost–benefit analysis of adolescent substance abuse treatments, including illustrative estimates of the dollar value attached to outcomes related to education and employment, criminal activity and juvenile justice services.

have been developed to estimate willingness to pay for many of these outcomes.

Cost–benefit analyses of social determinants of health interventions can be conducted using either a bottom-up or top-down approach to valuation. In the bottom-up approach, a dollar (or other currency) value is placed on each impact of the intervention, based on estimated willingness to pay for each outcome. The total benefits of an intervention equal the total willingness to pay for all of the impacts. For example, in a bottom-up approach to place a monetary value on saving a high-risk youth, Cohen and Piquero (*15*) use estimates of three components of crime costs: victim costs, criminal justice system costs and the lost productivity of incarcerated offenders. The values of these components are then added up to place a value on preventing various criminal offences. These researchers then use these estimates to calculate the present value of the costs imposed by a career criminal, which forms the basis for their estimate of the value of saving a high-risk youth. To continue the bottom-up approach, the value of saving a high-risk youth might be one component of the benefits of a social determinants of health intervention, such as early childhood education. The value of preventing career criminals would then be combined with the value of the participants' higher earnings, improved health and other outcomes.

The top-down approach to valuation uses estimates of willingness to pay for an impact at a higher level of aggregation. For example, Cohen and Piquero (*15*) compare the bottom-up estimates of the value of the components of the costs of crime with top-down estimates of willingness to pay to prevent crime. To compare the results, in their bottom-up approach they estimate that each murder results in $4.6 million of victim costs, $300 000 in criminal justice system costs and $140 000 in offender productivity losses, for a total of over $5 million. They then total these sums in the top-down approach to derive an estimate that the willingness to pay to prevent a murder is $11.8 million.

In principle, a cost–benefit analysis of a social determinants of health intervention could use the top-down approach based on direct estimates of willingness to pay for the intervention. Most applications of this approach would probably have to rely on stated preferences through a contingent valuation survey.[11] For example, surveys could elicit willingness to pay for an early childhood intervention programme of a specified size. The method of conjoint analysis could enhance the survey's usefulness. By presenting respondents with different scenarios, a conjoint analysis could provide estimates of willingness to pay for a range of programme sizes and other programme attributes. The obvious advantage of the top-down approach is that it eliminates the need to piece together the values of all of the various intervention impacts.

It is also possible to take an intermediate position between bottom-up and top-down approaches. This approach could focus on proximate outcomes common to a variety of different social determinants of health interventions, such as improvements in children's cognitive and non-cognitive abilities. Estimates of willingness to pay for improved child abilities could be useful to estimate the benefits of a range of social determinants of health interventions, including early childhood education but also housing and environmental interventions.

In closing this section, two notes of caution are in order to avoid oversimplification of the recommendations. First, while willingness to pay does represent, in principle, a promising approach to valuing the benefits to be had from social determinants of health interventions, the limitations and problems of the approach must also be recognized. As revealed by considerable evidence from the psychology and behavioural economics literature, existing willingness to pay estimates can suffer from significant bias and uncertainty, especially for unfamiliar goods involving small probabilities. Examples are provided in critical reviews by Smith and Sach (*16, 17*). Second, while the societal perspective is the most relevant economic evaluation perspective to adopt in the case of multisectoral social determinants of health interventions, there may be good reasons to adopt a sector-specific perspective in addition to the social one. This could apply in the case of

[11] In principle, it might be possible to use the revealed-preference approach and infer willingness to pay for some social determinants of health interventions based on market behaviours. For example, the value of early childhood education programmes in a school system might be reflected in higher housing values. In this example, the challenge is to disentangle the value homeowners place on the programme for their own children versus the value they place on the programme for helping disadvantaged children in their community. This might be possible by focusing on housing prices paid by childless homeowners.

social determinants of health investment decisions that reside solely within the ministry of health. Alternatively, in the (likely) event that a social determinants of health intervention that has proved worthwhile from a societal perspective would require contributions from different sectors, an understanding of the costs and benefits that are directly incurred by each sector separately would help determine which sectors may be most motivated to play their part and which sectors might need to be compensated for their net losses.

3.1.4 Conclusions

The method of social cost–benefit analysis is the most comprehensive approach to evaluate social determinants of health interventions. Conditional on the nature of the decision problem at hand, the social perspective may usefully be complemented by narrower sector-specific ones. Although cost–effectiveness analysis has gained widespread acceptance as a method to evaluate clinical interventions, its narrow focus on health effects makes it less suitable in the context of social determinants of health interventions.

Cost–benefit analysis methods require the use of time discounting and methods to account for uncertainty (see, for example, Boardman et al. (*3*), chapters 6, 7, 8 and 10). These are mainly standard issues that do not pose *special* conceptual challenges for the economic evaluation of social determinants of health interventions (which is not to imply that the debate about, for example, the most appropriate way of discounting costs and benefits in health economic evaluations *in general* has reached a consensus (see Claxton et al. (*18*) for a useful clarification and partial reconciliation of the various standpoints). Time discounting, however, is an important practical consideration. Many potential social determinants of health interventions, such as early childhood interventions, are investments that involve immediate costs that yield benefits only 10, 20 or more years in the future. In this context, the choice of a discount rate is a very important determinant of whether the discounted present value of the benefits of the intervention outweighs its costs.

Key messages: valuing consequences of SDH interventions

- Measuring intersectoral costs and social determinants of health interventions poses special methodological challenges. Such interventions often have wide-ranging impacts, so their costs may fall on individuals as well as on various parts of the public sector. Moreover, there may be ripple effects across different sectors.
- An important advantage of cost–benefit analysis over cost–utility analysis is that it is in principle straightforward to apply to the multiple impacts of social determinants of health interventions.
- Revealed preferences for health in labour and other markets and stated preferences are two valuation methods used to estimate willingness to pay for health. The methodology of contingent valuation surveys has been extensively studied and refined and is endorsed by a "blue ribbon" panel of social scientists convened by the United States National Oceanic and Atmospheric Administration to value protection of natural resources.
- It is also possible to take an intermediate position between bottom-up and top-down approaches. This approach could focus on proximate outcomes common to a variety of different social determinants of health interventions, such as improvements in children's cognitive and non-cognitive abilities.
- A social determinants of health intervention that has proved worthwhile from a societal perspective may require contributions from different sectors, and an understanding of the costs and benefits that are directly incurred by each sector separately would help determine which sectors may be most motivated to play their part and which sectors might need to be compensated for their net losses.
- Time discounting is an important practical consideration in cost–benefit analyses. Many potential social determinants of health interventions, such as early childhood interventions, are investments that involve immediate costs that yield benefits only 10, 20 or more years in the future. In this context, the choice of a discount rate is a very important determinant of whether the discounted present value of the benefits of the intervention outweighs its costs.

3.2 Valuing reductions in health inequities

Both the theory and practice of economic evaluation tend to shift the focus away from the value of reductions in health inequities. The theoretical foundations of economic evaluation methods focus on efficiency: the total health gains or the total benefits from interventions, regardless of how they are distributed across different members of society. In practice, recent literature reviews have confirmed that to date economic evaluation studies in health care and in public health have for the vast majority chosen not to take into account distributional effects (*19*). At the same time, several empirical studies have shown that people are willing to sacrifice overall health benefits for a reduction in health inequalities (*20*).

The emphasis on efficiency over equity tends to neglect a central goal of social determinants of health interventions. This section reviews approaches to incorporate the value of reductions in health inequities into economic evaluations of social determinants of health interventions. To set the stage, the section begins with a discussion of equity–efficiency trade-offs, before turning to more detailed discussions of the role of health inequities in cost–effectiveness and cost–benefit analyses.

3.2.1 Valuing reductions in health inequities in cost–effectiveness analysis

QALY-based cost–effectiveness analysis (also known as cost–utility analysis) is often justified as a tool to help decision-makers maximize the health gains possible given a constrained health sector budget. Any decision made solely on the basis of maximizing health gains across an entire population is one that implicitly gives an equal weight to one QALY gained regardless of who gains it (*21*).[12] This "a QALY is a QALY" assumption can only be valid for decision-making if society has no desire to give additional weight for QALYs that accrue to certain groups of people. These could be the socioeconomically deprived, the young, those who are severely ill or those having a very low life expectancy. For example, the "a QALY is a QALY" assumption rules out the possibility that society might prefer to deliver an improvement of 0.1 in the quality of life state to a patient who is severely ill over someone who is in near perfect health. Any divergence away from the strict "a QALY is a QALY" assumption, in order to value more equitable outcomes, will be associated with some loss in total health outcomes. This is an example of the equity–efficiency trade-off.

Although it neglects health inequities, it should be noted that the "a QALY is a QALY" assumption helps rule out decisions that lead to outcomes that directly contradict fundamental ethical, legal and political principles. This is particularly true for clinical decisions, where the health economic evaluation literature is currently concentrated, but does not necessarily hold for public health interventions. It is hard to envisage any situation where it would be acceptable to actively deny a clinical intervention, such as a cholesterol-lowering statin therapy, to a particular group of patients based on their income or place of residence. Yet this kind of discrimination, in the form of targeting certain groups, is at least acceptable, and may even be encouraged, in public health interventions.

Equity-weighting analysis has been proposed as an extension of cost–effectiveness analysis that incorporates the value society places on reductions in health inequities (*22*). The basic idea of the approach is to reject the "a QALY is a QALY" assumption and explicitly place greater weight on the QALY gains of certain groups. In this approach, it would be possible to place a weight on the QALY gains associated with competing public health policies according to the effect that each has on health inequities. For example, a QALY gain that is also associated with a reduction in health inequities would be given more weight than a QALY gain that leaves health inequities in place. Ultimately, alternative policies could then be ranked, rather neatly, not just in terms of their cost per QALY but also in terms of some cost per "equitable QALY" measurement.

While the need to address equity concerns in economic evaluation is widely shared, a number of unresolved issues remain with the equity-weighting approach (*23*). Unlike monetary outcomes, equity outcomes could have

[12] This is the case regardless of how the QALY is achieved. Society may also have other concerns, in additional to equity considerations, such as a desire to protect the freedom to make choices. In the United Kingdom, for example, a recent citizen's council meeting indicated that the public consider that "non-mandatory public health measures, such as providing education and information, were preferable to mandatory ones, provided they were effective" (*21*, p. 26).

a variety of conflicting meanings. It has been argued that there are so many potential dimensions of equity that the use of equity weights would substantially complicate the analysis (*24*). It seems unlikely that it would be sufficient to incorporate the equity weights at an aggregate level. More likely, weights would need to be applied separately for each individual targeted by a policy according to a range of equity-relevant characteristics. In any case there is very little evidence of the approach having been used in practice. One notable exception, which includes explicit time and age weights, is Murray and Lopez (*25*).

3.2.2 Valuing reductions in health inequities in cost–benefit analysis

In standard social cost–benefit analysis, the net benefits of an intervention are calculated without regard to how the benefits and costs are distributed to different members of society. As a result, even though they generate large benefits for disadvantaged populations, reductions in health inequities will not necessarily lead to positive net benefits in a cost–benefit analysis. As explained by Harberger, a pioneer of social cost–benefit analysis, the equal weighting of benefits and costs without regard to their distribution is fundamentally "a technical convention which permits us to separate resource allocation from distributional effects in the analysis of any given problem" (*26*). Harberger further states (p. 3):

> *I emphatically do not mean to say or imply thereby that distributional considerations are unimportant, or that economists should refrain from expressing opinions concerning them. In fact, I believe that such opinions can play a vital role in the public debate over many policy issues, especially on the wide range of programmes with explicit distributional orientation.*

Social determinants of health interventions are perfect examples of such programmes.

Several approaches, including the use of distributional weights and the basic needs approach, have been proposed and implemented as ways to incorporate societal concerns about inequities. Analogous to equity weights in cost–effectiveness analysis, the basic idea of distributional weights is to reject the "a dollar is a dollar" assumption made in standard cost–benefit analysis. The appropriate choice of distributional weights could reflect a society's willingness to redistribute income from the rich to the poor. Alternatively, the basic needs approach retains the assumption that "a dollar is a dollar", but places higher dollar values on changes in the consumption of goods and services that meet basic human needs, such as health care, food and shelter. Again, social determinants of health interventions are perfect examples of programmes that would be more highly valued using the basic needs approach to cost–benefit analysis.

Harberger expresses doubt that economics could achieve a consensus about the weight that should be attached to the welfare of different groups (*26*). However, currently existing methods used for valuing different health states, such as discrete choice experiments, could be used to elicit information from the public about their preferences for various equity–efficiency trade-offs. For example, Cai et al. (*27*) use a stated-preference survey to explore equity trade-offs in choices over policies to prevent climate change. They find that some respondents' willingness to pay is higher when they believe that the impacts of climate change may be borne disproportionately by the world's poor. Stated-preference surveys could similarly elicit willingness to pay for the reductions in health inequities due to social determinants of health interventions. It would then be a straightforward exercise to incorporate estimates of willingness to pay to reduce health inequities in cost–benefit analyses of social determinants of health interventions.

3.2.3 Conclusions

Table 3.1 presents a hierarchy of approaches to incorporating equity considerations into economic evaluations of social determinants of health interventions. The hierarchy is adapted from Cookson et al. (*28*). The first two approaches are recommended as relatively unproblematic. Neither attempts an explicit valuation of society's willingness to pay for reductions in health inequalities, but, if published alongside the results of standard cost–effectiveness analyses or cost–benefit analyses, they could provide valuable supplementary information for decision-makers concerned about the impact of competing health interventions on health inequities.

The first approach is the simple exercise of bringing together all existing information relating to how each policy intervention under consideration might affect health

inequities. Ideally, this would include information about existing trends in health inequities, how those inequities have been affected by similar interventions elsewhere and anything that is known about society's willingness to pay to reduce those inequities. Clearly, this is only a first step to incorporating equity considerations into economic evaluation and may disclose little useful information. However, in terms of best practice, it should be considered a minimum requirement.

The second approach, health equity impact assessment, is an attempt to quantify the impact that competing interventions are likely to have on various health inequities. This is likely to take the form of collecting data on how the cost–effectiveness or net benefits of interventions will change if the intervention is targeted at different population subgroups. Standard evaluation methods would be suitable to achieve this. However, many evaluations of interventions tend to measure average effects and lack the necessary data relating to specific subgroups, so this technique is likely to be costly in terms of requiring additional data.

The choice of approach should be determined by a number of factors. Progression through the hierarchy relies on the availability of suitable information and data such that in many cases it may only be possible to complete the simple review of background information. However, it is also important that a decision to invest resources in completing one of the more advanced approaches should be made only with consideration of how valuable it is to the decision-maker to incorporate a particular equity consideration into the economic analysis. Or, to put it another way, how sensitive is a decision that was made on the basis of QALY maximization (or net benefit maximization methods) to the inclusion of equity considerations?

Table 3.1 Potential approaches to incorporate equity considerations into economic evaluations of social determinants of health interventions

Approaches	Advantages	Disadvantages
Review of background information on health inequities	Requires no new methodology Is cheap, easy and quick to complete Ensures that all existing relevant materials are available to the decision-maker Is a useful first step	Provides only an insight to some associated issues; does not provide conclusive answers to such questions as, is the intervention cost–effective? And does it reduce inequity?
Health inequity impact assessment	Requires no new methodology in terms of completing cost–effectiveness or cost–benefit analyses Require no measurement of how much society values changes in health inequities Provides evidence on the cost of reducing health inequities	Requires data on the cost–effectiveness or net benefits of an intervention by population subgroup; these data are not often collected
Equity weighting of health outcomes or Willingness to pay for health inequities	Incorporates a quantifiable value for society's willingness to pay for a reduction in health inequalities If completed at the individual level, would probably provide a very accurate tool	Costly in terms of time, data collection and computing power Not yet used in practice Suitable individual-level data are lacking

3.3 Challenges in assessing the value for money of social determinants of health interventions

The use of economic arguments, in particular regarding the "value for money" of suggested interventions, has been a low priority in recent major social determinants of health initiatives, such as in CSDH (*29–31*).[13] At the same time, the need to add an economic perspective to the analysis of social determinants of health and of health inequalities is increasingly recognized in the public health community (*32*).

Because any economic evaluation hinges on the evidence of the effectiveness of the entity being evaluated, a considerable share of this discussion focuses on the challenge of assessing whether a given intervention "works" (and if so, for whom). It is well known that compared to clinical interventions, the evidence base for broader, population-based public health interventions (possibly including at least some social determinants of health interventions) is much thinner (*33, 34*). The availability of abundant evidence on the inverse relationship between socioeconomic status and health can be seen as a useful target and benchmark for public policy, but it does not inform policy-makers of the best course of action. There is currently a strong demand in public health research to fill the evidence gap left by the comparative scarcity of randomized controlled experiments in public health and social determinants of health interventions. Several authors have called for turning to "quasi-experimental" evidence or "natural experiments"[14] as one way to gain useful effectiveness evidence on the basis of observational data (*35–39*). Indeed, it can be argued that the use of such methods is the principal way forward when it comes to assessing the impact of social determinants of health interventions. This is why much of what follows elaborates on this point.

Once effectiveness is reasonably well established, economic evaluation methods can be applied to provide systematic guidance to policy-makers about the costs and consequences of alternative courses of action. Frequently, economic evaluations are limited to sector-specific domains. For example, the costs of a new medical treatment will be compared to the life years gained, or the costs of worker training will be compared to the benefits of higher lifetime earnings. In contrast, economic evaluations of social determinants of health interventions must consider their impacts across multiple domains. For example, investments in nutrition and early childhood education have shown potential not only to improve health, but also to lead to cognitive and behavioural gains and increased schooling (*40*). Economic evaluations of social determinants of health interventions must also recognize the value society places on reductions in health inequities. Another criterion is for greater transparency in evaluation methods.

When evaluating alternative policy interventions, it is important to use a research design that provides credible estimates of the causal impacts of the intervention under consideration, even in the absence of randomized experimental evidence. In this sense, Kenkel and Suhrcke (*41*) offer a detailed catalogue of quasi-experimental, econometric or structural models that can be used to provide credible estimates of the effectiveness of social determinants of health interventions.

- **Randomized control trials.** Randomized experiments are considered the gold standard for estimating effectiveness. However, a range of political, ethical and practical concerns has limited their use in the evaluation of social determinants of health interventions. Some examples include experimental evaluations of early childhood interventions, such as the Perry Preschool programme, and an experimental evaluation of the Moving to Opportunity experiment that provided housing vouchers to poor families in the United States. A recent meta-analysis of evaluations of early childhood

[13] There was some consideration of certain economic aspects in the recent England-specific strategic review of health inequalities in England post-2010, the Marmot Review (*30*), in that an attempt was made to estimate the expected economic benefits of reducing health inequalities (*31*).

[14] Examples include Bonnefoy et al. (*35*), Jones (*36*), Academy of Medical Sciences (*37*) and Ramanathan et al. (*38*). In addition, calls for public health research funding appear to increasingly incorporate a focus on quasi-experimental evidence (for example, the recent Phase IV of the National Prevention Research Initiative in the United Kingdom). The United Kingdom's Medical Research Council, after its widely cited complex intervention guidance (*39*), is preparing guidance on the evaluation of public health interventions using natural experiments.

interventions found 23 estimates of effectiveness based on randomized designs (*40*).

Despite the challenges to implementing experimental designs in social determinants of health interventions, it is important to bear in mind that at least some of the concerns can be overcome. For instance, instead of completely "depriving" one or more communities of the "treatment", all communities could receive the intervention, but in a phased manner, thereby allowing analysis of the variation in outcomes according to the intensity of the intervention over time (*36*). On the other hand, the recognition of the randomized control trial as the gold standard should not ignore its limitations, arguably the main one being the very restricted generalizability (external validity) of the findings beyond the population and circumstances encountered within the trial.

- **Quasi-experimental econometric methods.** Quasi-experimental methods often rely on constructed quasi-experiments to estimate causal impacts. One of the main quasi-experimental methodologies is that based on difference-in-difference estimators, which relies on variation across groups that is neither natural nor an experiment, and compares the before and after results between the treated and untreated comparison groups. Another quasi-experimental method is the regression discontinuity approach, which relies on variation that creates a discontinuity in assignment to an intervention, so that individuals on each side of the discontinuity are provided useful treatment versus control groups. The third quasi-experimental method is the instrumental variables approach, where a suitable variable (the instrument) provides an exogenous source of variation that allows identifying a causal relationship. These methods present similar limitations to those of the randomized control trial. The details and the context of a new intervention being evaluated may differ from the past quasi-experiment studied, and the estimates may be of limited generalizability.
- **Structural econometric methods.** The structural approach emphasizes clearly articulated economic models that can be used to evaluate the impact of public policies, forecast their effects in new environments, and predict the effects of policies never tried. One of the strengths of this method is that it takes into special account the problem of external validity (*42*). Structural modelling matches observed past behaviour with a theoretical model, which in turn is used to predict the responses to possible environmental changes (*43*). This method's strength is wider generalizability, while its weaknesses stem from its assumptions, complexity and lack of transparency, which make replication and sensitivity analyses more difficult.

In practice, evaluations of social determinants of health interventions will most often have to rely on quasi-experimental methods to estimate the causal impacts required to measure programme effectiveness, although selection of the method will depend on the existing research base and the practicality of new research on the causal impacts of the intervention.

Certain recommendations can be made up front for the choice of evaluation methodologies in the case of social determinants of health. In order to provide a more complete guide to policy-makers evaluating potential future interventions, a combination of structural models and meta-analysis to generalize evidence on intervention effectiveness, together with estimates of effectiveness and causal impacts in "natural units" as directly measured in the evaluation, will be desirable. The multiple sources of uncertainty that arise in estimates of the effectiveness of social determinants of health interventions (statistical uncertainty in experimental or quasi-experimental estimates of programme impacts, additional uncertainty if estimates from multiple sources are combined, and uncertainty in predictions about long-term impacts) should be accounted for in any analysis.

Cost–effectiveness or cost–utility analysis, and cost–benefit analysis, are methods that allow valuing the health consequences of interventions using a health and money metric respectively. The use of cost–benefit analysis seems to offer particular potential for the evaluation of social determinants of health interventions. In this sense, and considering the special nature of the social determinants of health and the potentially multisectoral implications of interventions that aim to address them, Kenkel and Suhrcke (*41*) and others recommend the use of social cost–benefit analysis as the approach to develop a comprehensive measure that reflects the value of improving outcomes across multiple domains. Cost–benefit analysis is based on societal willingness to pay for the health improvements and other consequences of social determinants of health interventions, both

through revealed and stated preferences, and using either a bottom-up (total benefits equal the total willingness to pay for the addition of the value attributed to all impacts) or top-down (total benefits equal the value attributed to the intervention) approach to valuation. When policy-makers face an equity–efficiency trade-off, the results of cost–effectiveness analysis or cost–benefit analysis can also provide guidance by quantifying the efficiency losses incurred to improve equity.

Cost–benefit analysis provides an increasingly used and recognized tool for social policy evaluation (*44*). As explained above, cost–benefit analysis aims at identifying the resource allocation that can generate the largest aggregate value, as assessed by summing individual valuations across all members of society. It does so by predicting net benefits based on the monetization of predicted effects with shadow prices. However, and as Kenkel and Suhrcke (*41*) and Weimer and Vining (*44*) point out, despite the potential of this method there are certain concerns that need to be considered and addressed through further research and analysis.

The high levels of uncertainty affecting social policy areas pose an additional challenge. Cost–benefit analysis involves the use of time discounting, which in the case of social determinants of health interventions that normally unfold their impacts over long periods of time becomes particularly important. The uncertainty of the predicted effects and of shadow prices applied needs to be explicitly acknowledged by researchers using this methodology. (Monte Carlo simulation may be one way of capturing the degree of uncertainty in cost–benefit analysis.)

Additionally, it is necessary to consider that social policy is often desirable from an equity perspective, an aspect that standard cost–benefit analysis does not capture. There is no consensus among economists on how best to account for distributional effects in cost–benefit analysis or cost–effectiveness analysis. One possible avenue is the incorporation of desirable distributional effects through weighting (based on differentiated marginal utility depending on income level). Researchers have proposed different proxies for relative marginal utilities based on tax rates (*45, 46*) or patterns of public expenditure (*47*). Yet this method has been generally regarded as a complement to rather than as a replacement for regular cost–benefit analysis. An alternative is to translate preferences to pay to help the most disadvantaged into standard willingness to pay measures, using for instance contingent valuations surveys, increasingly used in health policy (*48*).

Equity-weighting analysis has been proposed as an extension of cost–effectiveness analysis that incorporates the value society places on reductions in health inequities (*22*). The basic idea of the approach is to reject the "a QALY is a QALY" assumption and explicitly place greater weight on the QALY gains of certain groups. Other approaches, including the use of distributional weights and the basic needs approach, have been proposed and implemented as ways to incorporate societal concerns about inequities in cost–benefit analysis. However, a universally accepted method to incorporate the value of reducing health inequities into economic evaluations has yet to emerge.

The need to consider behaviours that are often relevant to social policy and do not satisfy the assumptions of neoclassical welfare economics, such as addictions, is an additional problematic area. As argued by Weimer and Vining (*44*), addiction-driven demand may not provide utility gains in the same way as non-addicted demand. Cost–benefit analysis needs to incorporate this factor; otherwise the costs of intervention that reduce the consumption may be overestimated. Although some authors (*49*) consider that when consumers take full consideration of the future effects of their current consumption, addictive behaviour is irrelevant in these terms (rational addiction), it is more likely that consumers are time inconsistent and myopic as to the future effects of current behaviour; and therefore, that their demand schedule is not the standard one. Weimer et al. (*50*) employ contingent valuation to estimate smokers' willingness to pay for removal of addiction in a model that takes account of this in cost–benefit analysis. Yet more studies to develop confident estimates of non-addicted demand for goods with addictive properties or which engender behavioural patterns with addictive properties are required.

Key messages: value for money

- In addition to the evidence that something works, one needs to show that if only something is done, then the "benefits" (appropriately defined) at least outweigh the "costs" (also appropriately defined) of the intervention. These are two key steps involved in undertaking "value for money" assessments.
- When evaluating alternative policy interventions, it is important to use a research design that provides credible estimates of the causal impacts of the intervention under consideration, even in the absence of randomized experimental evidence.
- In practice, evaluations of social determinants of health interventions will most often have to rely on quasi-experimental methods to estimate the causal impacts required to measure programme effectiveness.
- Certain recommendations can be made up front for the choice of evaluation methodologies in the case of social determinants of health: in order to provide a more complete guide to policy-makers evaluating potential future interventions, a combination of structural models and meta-analysis to generalize evidence on intervention effectiveness, together with estimates of effectiveness and causal impacts in "natural units" as directly measured in the evaluation, will be desirable. Additionally, it is necessary to consider that social policy is often desirable from an equity perspective, an aspect that standard cost–benefit analysis does not normally capture. There is no consensus among economists on how best to account for distributional effects in cost–benefit analysis or cost–effectiveness analysis.
- One possible avenue is the incorporation of desirable distributional effects through weighting (with differentiated marginal utility depending on income level). An alternative is to translate preferences to pay to help the most disadvantaged into standard willingness to pay measures. Equity-weighting analysis has been proposed as an extension of cost–effectiveness analysis that incorporates the value society places on reductions in health inequities.

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CHAPTER 4. Can education policy act as health policy?

4.1 Efficiency-based rationales

4.1.1 Economic benefits of education and the presence of market failures

There is abundant evidence of individual-level economic benefits resulting from greater quantity and quality of education. Early childhood education influences future outcomes such as labour market outputs, participation in welfare, teenage pregnancy and crime through children's cognitive and social skills, academic performance and school progress (*1–5*). An additional year of basic education was associated with an over 8% increase in wages in Europe (*6*), while in Latin America basic education entailed 50–120% higher earnings (*7*). As for the benefits of better-quality education, an increase of one standard deviation in test scores resulted in a 12–48% wage increase (*8*), while a teacher whose effectiveness is one standard deviation above the mean entailed gains of over $400 000 in student future earnings in the United States (*9*). Higher education in turn has multiple individual benefits, including better labour market prospects (*10*). The wage premium of a college degree over high school in the United States increased from about 40% to over 65% between 1980 and 2000 (*11, 12*), and can be up to 200% in Latin America (*7*).

Imperfect information and the potential emergence of monopolies, however, limit the efficient functioning of the education market, in the absence of government intervention. Consumers of education are most often not mature adults, and their education decisions are made by their parents or relatives. Parents, however, might not always be acting in their children's best interest, often due to information problems. The longer-term benefits of education are not always fully evident, and collecting the necessary data to make informed decisions is a time-consuming process that not all people are equally able or willing to engage in. Hence, the expected returns from additional schooling are often much lower than actual or realized returns, as evidence from the Dominican Republic and Mexico indicates (*13, 14*), leading to less than optimal investment in education. Monopolies may also arise in the education market, as certain geographical areas are not sufficiently populated to support more than one educational centre (*15*).

The most relevant market failure in education is the presence of large externalities. Despite the methodological difficulties of estimating the full social returns of education, different studies suggest that improved educational attainment and quality would result in higher country-level labour force productivity and economic growth (*16–18*). For instance, an increase in test performance by one standard deviation is associated with a 1% increase in annual growth rates of GDP per capita (*19*). The present value of OECD aggregate gains from school improvements from 2010 through to 2090 could be as much as 13.8% of the discounted value of future GDP (*20*). Higher education has also been shown to have had a strong causal impact on economic growth in France, Japan, Sweden, and the United Kingdom (*21, 22*), and to explain part of the growth gap between Latin America and Asia in 1991–1995 (*23*). Additionally, a one-year increase in the stock of tertiary education was estimated to raise the African GDP per capita by 12.2% (*24*).

There is a wide range of spillover effects through which education affects overall development. Existing evidence suggests that impairments during childhood, especially in the early years, can entail significant long-term costs for societies as a whole, in terms of foregone human capital and therefore the loss of economic returns from the contributions of better prepared, skilled and more productive individuals (*25*). However, large associated social costs would also derive from the implications of having to deal with childhood-related impairments and their consequences later in life (rather than preventing them early on), in the form of (for example) health care or unemployment expenditures and delinquency. Basic education in this sense can reduce fertility, improve health and nutrition, and promote other behavioural changes that drive economic development (*26*). Others have highlighted the potential benefits of basic education in terms of lower crime rates (*27–30*), increased political participation (*31–34*), better economic and political governance, the effect of a highly educated workforce on other workers' salaries, society's health and social capital, and the impacts of research activities (*7, 10, 35–38*). If all of these wider societal benefits of education were taken into account, the social rates of return on investment in education are likely to exceed considerably the private rates of return on higher education (almost double according to some estimations) (*35, 39–42*).

4.1.2 Does education have an impact on health?

The impacts of education on health have long been established. Individuals with more years of schooling tend to have better health, well-being and health behaviours in adulthood, and this effect is causal to a substantive extent (which is of course not to imply that all studies that demonstrate an association between education and health allow for strong causal inference). The effects are particularly robust and large for adult depression, adult mortality, child mortality, child anthropometric measures at birth, self-assessed health, physical health, smoking, hospitalizations and use of social health care (*43–46*). There is evidence that education can help reduce chronic disease incidence and improve the personal management of existing disease (*47, 48*), and that it can help reduce the prevalence of sexually transmitted diseases, such as human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) (*49, 50*). A comparative study in Europe found that people with lower secondary or less education have elevated risks of poor self-rated health and functional limitations (*51*). For a cohort of Swedish men born between 1945 and 1955, an additional year of schooling substantially reduced the likelihood of being in bad health (*52*).

Education has been shown to be a reliable predictor of lower mortality rates (*53*). There is abundant evidence that the years of schooling tend to increase life expectancy for individuals in the United States (*54, 55*), where eradicating education-associated excess mortality would avert almost 1.4 million deaths over a six-year period (1996–2002) (*56*). Sizeable mortality gradients by education for all age groups and for both sexes have been found in Switzerland (*57*), and mortality rates are 5% lower for more educated men in the United Kingdom (*58*). The probability of being in good or excellent health is higher for those with a post-secondary and university education in different countries (*59, 60*). Educational attainment is strongly associated with risk behaviours for the health of young people, such as consumption of tobacco, alcohol and other harmful substances, risky sexual behaviours, poor nutritional practices and lack of physical activity (*40, 61–71*). These behaviours determine more than 70% of the morbidity and mortality experienced during youth and almost 66% during adulthood (*69, 72*). Similarly, evidence from Australia, Canada, the United Kingdom and the United States suggests that more education can lead to greater utilization of preventative health care (*45, 73–75*).

Children's health outcomes are largely affected by their parents' education. The *Education for All Global Monitoring Report* suggests that universal secondary education for girls in sub-Saharan Africa could save as many as 1.8 million lives annually, as better-educated mothers are less likely to have low-birth-weight children (*76*). Evidence from Asia and Africa suggests that child mortality rates were 50% lower for children born to mothers who attended secondary school (*76*). Improved quality of education speeds up the rate of decline in infant mortality (*77*). Additionally, parental investments in their children's education may have the effect of making children more future oriented and willing to engage in behaviours that have longer-term consequences for better health (*68*).

4.1.3 Average impact of education interventions

A growing body of evidence confirms the individual and social economic value associated with particular changes in education policies, such as expanding access to high-quality early childhood education.

Several preschooling experiences in high-income countries (Perry Preschool, Chicago Parent Center and Abecedarian programmes in the United States; and the Effective Provision of Preschool Education project in the United Kingdom), and specific interventions in a number of low- and middle-income countries (including Argentina, Bangladesh, Brazil, Colombia, India, Mozambique and Uruguay), have been found to have a positive impact on children's cognitive ability, school readiness, educational attainment and performance, measured using different indicators. In the cases where the impacts of preschooling programmes into adulthood have been evaluated, the results are compelling. Children that were enrolled in the programme systematically show better results at adult age in terms of wages, homeownership and rates of imprisonment, for instance (*48, 78–95*). Additionally, these interventions can help increase overall economic well-being and tax revenues and reduce public expenditures for remedial education, criminal justice treatment and crime victims (*91*).

Interventions to improve the quality of primary and secondary education by increasing available resources have also shown positive effects. While many studies on the effect of additional resources on educational outcomes across countries show small positive impacts (*96, 97*), there is evidence that a decrease in the number of students in a class increases achievement levels (*98*), and that class size reductions can improve performance, the length of education and lifetime earnings in diverse countries, including Denmark, Israel, South Africa and the United States (*99–102*). In lower-income countries such as Kenya, Nicaragua, the Philippines and Sri Lanka, the provision of learning materials (for example workbooks or radio instruction) had significant impacts on pupils' performance and drop-out rates (*23, 103–105*).

Information- and incentive-based interventions at the primary and secondary level also show some positive results, but more research on their effectiveness is required. Report cards, which describe students' achievement in absolute terms and relative to other schools, improved learning by 0.10 standard deviation and increased enrolment in Pakistan (*106*). A school choice programme in Colombia also appeared to yield large benefits for participants (*100, 107*). However, evidence from different voucher programmes in Chile, Spain and the United States seem to indicate that more research on these interventions is required (*108–110*). On the other hand, results from India, Israel and Kenya suggest that teacher incentives positively and significantly affected student short-term educational outcomes, although evidence is not so clear with regard to longer-term outcomes (*111–113*).

In comparison to the evidence available on a range of educational interventions, evidence of subsequent direct health impacts of type 2 (with health partnerships) and type 3 (with health advocacy) interventions in education remains scarce. The direct health impacts of early childhood education have rarely been evaluated and remain limited to lower smoking rates in adulthood in the case of high-income countries. In low- and middle-income countries, the evidence of health impacts is mixed. However, a recent study found that increasing the relative teacher wage by one standard deviation can result in about 1.9 less deaths per 1000 people per extra year of basic education (*114*). Improvements in school quality in turn broaden the beneficial effects of education on several measures of health later in life, including self-rated health, smoking, obesity and mortality (*115*).

The direct impact of educational interventions on health is more clear with respect to type 1 place-based interventions aimed at encouraging healthier behaviours. School-based interventions to improve sexual and sexually transmitted disease-related knowledge and behaviours, as well as smoking and drug prevention programmes, tend to show positive effects across countries, although evidence on their long-term health impacts remains limited (*116–134*).

Other preventive health interventions in schools also show encouraging results, as is the case for services with regard to oral health (*135, 136*), diabetes (*137*), stomach worms (*138*) and malaria (*139*). School-based healthy diet and nutrition interventions (for example school garden programmes) and programmes to prevent overweight and obesity are most often successful in developed countries, while school feeding programmes lead to increases in weight and height for participants mostly in developing countries (*140–162*).

Most type 1 interventions are related to using information to change culturally and socially influenced habits. Sexual behaviours and substance use among children and young people are to a large extent determined by what is perceived to be socially accepted or encouraged. This is similarly true of behaviours related to sports and nutrition, which are largely influenced by the entourage and patterns that children and youths tend to observe as positive or referential. Interventions that aim to generate a change in unhealthy lifestyles among young people and children therefore normally entail a social values shift, and therefore make use of tools such as peer education to effectively encourage that necessary cultural transformation.

Pure resource-based higher education financial aid programmes have been widespread in liberal countries. A $1000 change in college costs (1990 dollars) in the United States was associated with an approximately 5 percentage point difference in college enrolment rates (*163, 164*). The United States Social Security Student Benefit programme and the World War II G.I. Bill (box 4.1) had generally significant effects on both collegiate enrolment and completion (*165, 166*). Regarding tax credits, and although overall eligible individuals are more likely to attend college, there is no differential increase in enrolment after the introduction of such instruments (*167–169*).

Box 4.1 From resource- to incentive-based interventions in higher education in the United States

The primary instruments for United States federal policy designed to increase collegiate attainment over the last three decades have been the programmes under Title IV of the Higher Education Act, notably Pell grants and Stafford student loans, tuition tax credits and specially directed aid aimed at specific populations (G.I. benefits and the Social Security Student Benefit programme). These forms of aid have been based on family income level and thus targeted the lower-income tiers in the population.

In 1996, the United States Government developed two large tax credit programmes, the Hope Learning Credit and the Lifetime Learning Tax Credit, which marked a shift in the way that governmental support would be distributed to postsecondary students and their families. The programmes targeted middle-income families that were excluded from other forms of aid, and good performance students (merit based). While it may only be used for a student's first two years of postsecondary education, the Lifetime Learning Tax Credit is available for unlimited years to those taking classes beyond their first two years of college, including college juniors and seniors, graduate students, and working adults pursuing lifelong learning. For each credit, the expenses covered are tuition and required fees at an educational institution eligible for aid. Additionally, and mostly following the example of the Georgia HOPE programme, other merit-based subsidy and scholarship interventions have been introduced at the state level.

The more recently introduced combination of resource- and incentive-based financial aid appears to have been especially effective. In the United States, many different state subsidies or grants programmes based on merit have been found to raise college attendance rates, such as HOPE in Georgia (by 8.6%) and others subsequently developed in Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi and South Carolina (by 4.7% on average), and to increase choice of four-year colleges. Other programmes, including a West Virginia incentive scheme for college students or a California grant programme offering free tuition or grants to students who maintained a certain minimum grade point average, were found to have substantial effects on achievement (*168, 170*). Two studies following Canadian students who were randomly assigned to receive a scholarship depending on their grades found that it improved performance and persistence of female students and achievement levels of male students (*171, 172*).

4.2 Equity-based rationales

4.2.1 Equity aspects in education

The right to equality of opportunity in education is based on the recognition that education has a fundamental effect on the recipients' and their children's lives. Education proves to be a major determinant not only of lifetime income but also of the quality of life throughout generations. For instance, it has been shown that children born to parents in the bottom income quintile in the United States have a 45% probability of remaining there as adults when they do not have a degree, compared to less than a 20% chance when they hold one. The right to education is included in the Universal Declaration of Human Rights (adopted by the United Nations General Assembly in 1948) and in several subsequent high-level policy initiatives, including the Millennium Development Goals. Accordingly, most societies require that education is distributed equitably, which is usually interpreted as the need to ensure equality of access for the minimum amount considered socially necessary (*15*).

Education access and performance are heavily determined by family background. Family income and the environment in which children live at early ages appear to predict educational outcomes in adulthood, mostly through the development of cognitive and non-cognitive (emotional, behavioural) abilities that are key for the future opportunities of children (*2, 57, 173–185*). Differences in the home environment can in fact explain up to half the social gradients in child behaviours (*186*). A socially inequitable distribution of education is thus likely to exist in contexts where income is unequally distributed.

Differences in access, attainment and performance across countries are often related to the different market failures highlighted in section 4.1. Informational gaps among students are particularly important in primary and secondary education, across all countries. School choice mechanisms tend to generate better outcomes for families

who are more informed – normally better-educated and more affluent families. Information is therefore one of the drivers of the correlation between educational outcomes and a family's socioeconomic circumstances (*187*). In developing countries, in particular, the direct and opportunity costs of education for children often remain key obstacles to access and completion, as well as distance to schools and lack of adequate facilities on the supply side. All these challenges and problems lie behind disparities in educational outcomes that in turn constitute major social determinants of health and health inequities.

The equity implications of higher education interventions remain a key scholarly question. It is often argued that the expansion of higher education could mostly benefit the already privileged, therefore widening inequality. Different authors report greater responsiveness to tuition differences among those from lower income quartiles (*188–191*) and find larger impacts of tuition on the enrolment decisions of low-income youths (*169, 192*). Other studies, however, fail to find such income interaction effect (*39, 193, 194*). A recent comparative study on the connection between inequality and tertiary education across high-income countries found that educational expansions tend to attenuate inequalities when they reach a "saturation" point, where educational attainment is nearly universal. Inequalities were in this way reduced through tertiary education expansions in China (Province of Taiwan), Israel, Italy, Japan, Republic of Korea and Sweden, and remained stable in most other countries (*195*).

4.2.2 Equity impacts of interventions

Suitable child development interventions can help equalize opportunities for low-income children. Evidence from developed and developing countries alike shows that early child development programmes allow counteraction of some of the negative consequences associated with inequality of opportunity (*2*). The positive impact of early childhood education on children from poor families is twice as high as for those from more advantaged backgrounds (*196*). Some of the programmes reviewed had important equity impacts, proving to be more beneficial for disadvantaged children (*83, 88, 197*). Other programmes such as the Oklahoma Pre-K, the Michigan School Readiness or the Head Start in the United States were in fact especially targeted at disadvantaged groups (*84, 85, 95*).

There is some evidence of the equity impacts of resource- and incentive-based interventions at the primary and secondary levels across middle- and low-income countries. For instance, the Full Time School programme in Uruguay, which doubled the schooling hours and provided additional materials, classrooms and teachers for sixth-grade primary school students, had a positive effect on mathematics and language test scores, especially among relatively disadvantaged schools (*198*). The abolition of school fees in a poor area of South Africa appeared to be effective in increasing secondary school enrolment in poor communities (*199*), while a scholarship programme in Indonesia had a strong impact on reducing drop-out rates at the lower secondary level during the economic crisis (*200*). Private school tuition vouchers allocated to students from low-income neighbourhoods in Colombia increased academic achievement (*107*), while, on the other hand, an educational subsidy in Côte d'Ivoire seemed to especially benefit higher per capita expenditure groups (*201*).

Some type 1 primary and secondary school-based health education programmes can also have equity implications. An elementary school-based obesity prevention intervention in the United States led to improvements in body mass index (BMI), blood pressure, and academic scores of students, especially for low-income Hispanic and white children (*150*). Another after-school obesity prevention programme for low-income African-American girls had a positive effect for BMI measures (*202*). A school-based intervention targeted at low-income children that included dietary improvement, curriculum development and physical activity improved health indicators related to weight and academic performance (*151*). School meals may also have some small benefits for disadvantaged children (*154*).

Information-based interventions could have potential to improve higher education equity outcomes. Low-income students in the United States apply to fewer and less selective colleges, mainly due to lack of information associated with their geographical isolation. Counselling interventions aimed at improving information thus show some positive effects in the choice of college (*203*). Further demonstrating this trend, improved information

on eligibility for financial aid and college options, and assistance with the federal application for financial aid, resulted in an increase of 25% to 30% in college enrolment (*204*). A small change in policy for ACT (one of the two college aptitude testing organizations in the United States), consisting in giving students four free score reports instead of three, which improved the amount of information available to students, produced a 20% increase in student applications to colleges (*205*).

The equity impacts of pure subsidies available to students across high-income countries remain unclear. Although lowering the costs of education through public subsidies, tax credits or limits on interest rates and financial obligations may in principle achieve greater equity in the financing of postsecondary schooling, the equity effects of such schemes remain often unclear mainly due to the lack of harmonized data that allow understanding the social composition of the population (*206*). Some studies find positive effects of more generous financial aid or programmes targeting resources for low-income students (*135, 207*), but a good share of students do not respond to them. The United States Pell grants programme, for instance, did not change enrolment or college completion for lower-income students (*208*). Additionally, merit-based grants in the United States do not show different relative effects on blacks and Hispanics (*170*). Tax credits, in turn, seem to mostly benefit middle- and upper-income students in the United States, as claiming tax credits or deductions would reduce the ability to benefit from other subsidized instruments.

Resource- and incentive-based financial aid interventions show equity effects at the higher levels. An analysis of different formulas of deferred and income-contingent tuition fees in Belgium, Germany and the United Kingdom concluded that both the human capital contracts[15] and income-contingent loans[16] have vertical equity properties because non-graduates do not pay, but also because the income contingency principle entails a redistribution of income among graduates (*209*). The income-contingent charge system for higher education in Australia resulted in a more equal distribution in access, and a marked relative increase in participation for the middle of the wealth distribution, and among females (*210, 211*). It is however found that income-contingent loans could raise tuition fees substantially in Germany (*212*).

Different financial support formulas for higher education exist throughout developing and emerging countries, although evidence on their impact remains limited. The Sociedad de Fomento a la Educación Superior (Society for the Promotion of Higher Education), implemented at private universities in Mexico, provided financial aid to lower-income students and was effective in improving academic enrolment and performance (*213*). A recent evaluation of the Student Loan Fund in Thailand, which provides financial support to low-income family students to access higher education, found significant effects on participation for those students whose family income was close to the poverty line, but few effects on students with higher incomes, which could be due to the fact that the income threshold for the loan was too high (*214*).

4.3 Value for money

Cost–benefit analysis of interventions presents particular difficulties in the education sector. Calculating the social costs and impacts of educational programmes is particularly challenging (see box 4.2 for preschool interventions), as it is to identify their distribution across different social groups. Measuring the costs and benefits of dimensions of education other than access to a year of attendance is also problematic, while the attribution of outcomes to actual interventions, as with all other interventions, presents particular difficulties. Finally, there are numerous factors that limit the external validity or general applicability and comparability of results.

There is however a large body of evidence on the high quantifiable benefits of preschooling, an area that has received much recent attention. It is estimated in this sense that health problems originated during childhood, including early life tobacco exposure, unintentional injury, obesity and mental health, and that affect approximately one third to one half of children born in the United States, could have a total social cost of about $50 000 per child, which translates to $65 100 billion for the entire birth cohort of children (*215*). In this sense, the health gains produced by preschool and class size interventions alone

[15] Human capital contracts require former students to repay a fixed proportion of their income.

[16] Income-contingent loans require graduates to repay a fixed amount each year if their current net income is above a certain threshold.

Box 4.2 Calculating the costs and benefits of early childhood education

For preschool programmes, the largest category of costs is the cost of instructional staff. In the Child-Parent Center programme, for example, instructional costs amounted to 43% of the total programme costs. The next largest categories of costs include costs for administration, operations and maintenance, family support staff, capital depreciation and interest, and the value of parents' time spent in the programme (*91*).

Benefits to the participants (through increased earnings) are experienced by the child and parents but do not directly benefit others. Based on cost–benefit analysis of three model preschool programmes (Abecedarian, Perry and Chicago Child-Parent Centers), average earning capacity increased from about $31 000 to $43 000 per participant. Increased maternal earnings were the largest source of economic returns in the case of the Abecedarian programme (over $73 000 per person).

Benefits to the general public include reduced expenditures for remedial education and social welfare services by governments, reduced tangible expenditures to crime victims, and increased tax revenues due to the participants' higher earnings. Crime savings was the largest economic benefit by far for the Perry Preschool programme ($90 246 per participant), and the largest category of economic benefits for the Child-Parent Center programme ($36 902 per participant). Benefits to society at large include the sum of benefits to participants and the general public.

There is also a set of benefits of preschool education that typically are not included in cost–benefit analyses: improved social and emotional outcomes; social cohesion (or citizenship); improved health of participant's future spouse and children; increased educational attainment of participant's children; increased saving; and increased charitable giving (*35*).

may exceed the costs of such programmes, with estimated savings of $3000 to $21 000 per student (*216*).

Cost–benefit analysis systematically finds that the economic return from providing early education to children in poverty far exceeds its costs (*217*). A net return of between $3 and $17 per $1 invested has been identified by different studies for the United States Perry Preschool, Child-Parent Center and Abecedarian programmes (*218–221*). Net present value varied from $75 000 to over $200 000 per child. Based on those studies, the annual rates of return from preschooling programmes targeting vulnerable children exceed what can be earned in the private sector on very low-risk investments (*222*). The Michigan School Readiness programme in turn can save the state an estimated $13.6 million annually only by decreasing grade repetition (*93*). Consistently positive economic returns of high-quality preschool programmes are much higher than those of most other educational interventions, especially those that begin during the school-age years, such as reduced class sizes in the elementary grades (*221*).

Although scarcer, some evidence of the potential benefits of educational interventions at higher levels exists. A simple cost–benefit analysis of class size reductions suggests that such a policy would bear very modest net benefits. The ratio of benefits to costs would range from a maximum of 1.9 for males (with a discount rate of 0% and a 3% increase in income) to a minimum of 0.08 for women (using a 0.06 discount rate) (*223*). The STAR programme in Tennessee (United States), which basically consisted of a reduction in class sizes during the early years of elementary school, has been found to have a benefit–cost ratio of 2.83 (*224*). The school-age Child-Parent Center programme, of which the main element was a reduction in class size from 35 to 1 (teacher) to 25 to 2 (teacher and aide) during grades 1–3, was found to have an economic return of $1.66 per $1 invested (*221*). The annual value of the benefits of college tuition subsidies in Minnesota is estimated to be between $531 million and $786 million (*225*).

Some studies appear to indicate that information- and incentive-based interventions tend to be less expensive than resource interventions. There is evidence that the implementation of formative assessment, a typical informational but also incentive-based intervention, would help improve educational achievement while using fewer resources than other types of interventions (*226*). Class size reduction programmes in this sense have been found to be 124 times less cost-effective than the

implementation of systems that assess student progress (*227*). Regarding school-based type 1 interventions, different analysis of the Expanded Food and Nutrition Education programme in the United States showed that these programmes can be very cost-effective, mainly through the prevention of chronic diseases. The cost–benefit ratio of the programme ranged from $2.66/1.00 to $17.04/1.00 (*228, 229*).

There is evidence of the high financial returns to or reduced costs of education in terms of health. The monetary value of the return to education in terms of health is perhaps half of the return to education on earnings (*44*). The health returns to education are estimated to be 1.3–5.8% in the Netherlands (*230*). It has been estimated that education would reduce the total cost of depression for the population of interest by £200 million a year in the United Kingdom (*231*), and that one additional year in schooling equals between $1700 and $17 700 income increases in terms of health in the United States (*52*). Expanding education to females is also estimated to potentially be a cost-effective intervention to lower HIV/AIDS prevalence in the United Republic of Tanzania. The best estimates result in positive net benefits, with benefit–cost ratios in the range 1.3–2.9 (*232*).

4.4 Conclusions

The economic justification to invest in education is evident from the existing research. Education largely determines short- and long-term outcomes for the individual, mostly in connection with labour markets and future income. The presence of market failures such as information asymmetries, monopolies and externalities clearly justify public intervention in the sector to ensure that it produces efficient outcomes. In this sense, there is a clear association between the quantity and quality of education at all levels and economic growth and overall development, directly through production benefits but also indirectly through spillover effects and social benefits. In particular, education can have relevant impacts for health behaviours and conditions throughout life.

Evidence from specific interventions confirms the economic value of education (table 4.1). The efficiency impacts of interventions have been more widely researched with regard to early childhood education, and in high-income liberal countries. The existing evidence from interventions systematically indicates that preschool programmes bear significant implications for the future opportunities of children. The evaluation of other interventions at higher levels also generally shows relevant effects for educational outcomes that affect long-term opportunities. Studies that assess the direct impacts of educational interventions on health remain however scarce, with the exception of type 1 centre-based programmes that mainly aim to influence children and young people's health-related behaviours. Generally, these programmes appear to be successful in improving the knowledge and attitudes of participants.

Education interventions can also have a relevant equity impact, although more evidence in this regard is necessary. Some early childhood education programmes, primary and secondary school-based health education interventions, and financial support formulas (such as the income-contingent loans and human capital contracts and information-based interventions for higher education) have shown redistribution effects. However, evaluations to date have mainly focused on the efficiency "average" impacts rather than on their implications for equity. From the social determinants of health perspective, devoting more efforts to the assessment of the differentiated impacts of policies with regard to specific groups remains a key challenge, especially considering the methodological difficulties that such effort might entail.

Regarding the value for money of interventions, cost–benefit analysis studies normally attribute net benefits to education interventions. This is particularly the case for early childhood education, where most available evidence is concentrated, but also for other education programmes at higher levels. The monetary value of education interventions in terms of health, when evaluated, is high. More evidence in this regard, applied to a wider range of interventions and country contexts, would make a significant contribution to the knowledge of what works best and at what cost when prioritization is required in the decision-making and policy-making processes, especially from a social determinants of health perspective.

In view of the multiple linkages between education and health, collaboration between both sectors can yield substantial social benefits. Cross-sectoral collaboration

has been emphasized by the Millennium Development Goals, and many specific initiatives that recognize these linkages have been developed, including the Focusing Resources on Effective School Health programme of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Child-Friendly Schools programme of the United Nations Children's Fund (UNICEF), the School Health and Nutrition programme of the World Bank, and the Health Promoting Schools programme of WHO. Specifically, the Health Promoting Schools movement has helped generate evidence on the benefits of joint action, and showed that education inequities remain a key challenge to improving health and educational outcomes (*233*). Although more research in this field is required, a closer collaboration between the two sectors clearly represents a promising avenue to effectively tackle the social determinants of health.

Twelve key points: education and health

Efficiency-based rationales

- There is abundant evidence that greater quantity and quality of education results in individual-level economic benefits, due to increased labour market participation, increased participation in welfare, and a reduction in negative behaviours, including engagement in crime.
- However, imperfect information, for example on the longer-term benefits of education, may lead to market failure in education, providing justification for government intervention to support advantageous initiatives.
- The positive impact of education on a wide range of health outcomes is well established, and extends to both parents and their children.
- Individual and social economic value is associated with resource-based interventions such as expanding access to high-quality early childhood education, and effective preschooling programmes can have a major positive impact on all aspects of adult life, including health indicators.
- Information- and incentive-based interventions at primary and secondary school levels show positive results, including for health indicators, though more research on their effectiveness is required.

Equity-based rationales

- The right to equality of opportunity in education is based on the recognition that quality of education has a fundamental effect on recipients' lives, and is a major determinant of future income and quality of life.
- Education access and performance are heavily determined by family background, including family income and environment, which strongly influence cognitive and non-cognitive abilities.
- Of key importance is ensuring that interventions to rectify market failures reach the most needy recipients; for example, ensuring that preschool or higher education interventions do not only benefit those who are already privileged.
- Suitable child development interventions can help equalize opportunities for low-income children, including through provision of additional teachers, classrooms and resources.
- Various targeted interventions, including subsidies, loans and other financial support formulas, can have positive impacts on children's health outcomes by a number of indicators, including obesity and blood pressure.

Value for money

- Cost–benefit analysis of interventions in the education sector is difficult, given the complexity of factors that are operating.
- However, there is a growing body of evidence that the economic and health-related returns on school-age interventions, particularly those targeting early education, far outweigh the costs.

Table 4.1 Education interventions: summary of health, economic and equity impacts

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
High-income countries					
Head Start and Head Start REDI United States Type 2 intervention – some involvement of health sector	Resource-based universal child care and preschooling programme that provides children aged 3 to 5 years with comprehensive support services, including early childhood education, health, and nutrition services. REDI (research-based developmentally informed) is enriched intervention that involves brief lessons, hands-on extension activities and specific teaching strategies.	Reduced probability of smoking (*234*).	Participants were about 8.5 percentage points more likely to graduate from high school, 6 percentage points more likely to have attempted at least one year of college, 7 percentage points less likely to be idle, and 7 percentage points less likely to be in poor health (*84*). REDI: Significant improvement of vocabulary, emergent literacy, emotional understanding, social problem solving, social behaviour, and learning engagement (effect size for the nine skills showing an intervention effect ranged from 0.15 to 0.39) (*82*).	Found to close one third of the gap between children with median and bottom quartile family income for a range of adult outcomes (*84*). As a result of the focus of Head Start on children from low-income families, health benefits from Head Start participation can reduce persistent socioeconomic health disparities (*235*).	The annual cost of the programme per year and student ranges from $6000 to $9000. The internal rate of return is estimated to be 7.9% (under certain assumptions) (*84*). The present value of the health effect of Head Start participation ranges from $11 704 to $3756 (3% and 7% discount rates) (*235*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Perry Preschool programme United States Type 3 intervention – no evident presence of health sector	Resource-based intervention that provides high-quality preschool education for young children living in poverty.	Lower smoking rates in adulthood (*222*).	Higher school readiness, commitment and attainment at age 14 and graduation rates. Significantly improved social responsibility and educational performance in adult life. Higher median annual earnings, employment and house ownership rates at age 27. Fewer were arrested or imprisoned. At age 40 more likely to have graduated from high school (65% vs. 45%), to be employed (76% vs. 62%), had significantly higher median annual earnings ($20 800 vs. $15 300), higher percentage of homeowners (37% vs. 28%), were more likely to have a savings account (76% vs. 50%), had significantly fewer lifetime arrests (36% vs. 55%) and significantly fewer months in prison or jail (28% vs. 52% ever sentenced) (*79, 92–94*).	Targeted at poor children.	Estimated annual social rates of return generally fall between 7 and 10% (*218*). According to more recent findings, the programme's benefits range between $13 and $17 for every dollar invested (*220*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Class size reductions Denmark Type 3 intervention – no evident presence of health sector	Variation in actual class size in Denmark driven by the interaction between random variation in cohort size and administrative rules that place a cap on class size in 8th grade. Can be used to evaluate the impact of class size reductions (*223*).	Not assessed.	Reducing class size during compulsory schooling by 5% (about a unit reduction from the current mean class size) would increase mean length of education by about 0.0375 years (about 8 days). The class size reduction translates into approximately a 0.2% increase in lifetime earnings (*223*).	Not assessed.	A simple cost–benefit analysis suggests that such a policy would bear very modest net benefits. The ratio of benefits to cost would range between 1.9 for males with a discount rate of 0% and a 3% increase in income to 0.08 for women using a 0.06 discount rate (*223*).
College costs reduction United States Type 3 intervention – no evident presence of health sector	Variation in college costs across states can be used to analyse their impact on teenagers' health-related behaviours, such as sexual partnership and substance use.	A $1000 reduction in tuition and fees at two-year colleges is associated with a decline in the number of sexual partners in the past year (by 26%) and the number of days in the past month youths smoked (by 14%) and used marijuana (by 23%) (*236*).	Not assessed.	Not assessed.	Not assessed.

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Income-contingent loan for low-income higher education students Australia Type 3 intervention – no evident presence of health sector	The introduction of a system of university charges in Australia at the end of the 1980s, the Higher Education Contribution Scheme (HECS), was accompanied by an income-contingent loan scheme to prevent adverse effects on lower-income students' enrolment or performance.	Not assessed.	The introduction of HECS was associated with aggregate increases in higher education participation (*210*).	Neither HECS nor changes operated in 1997 (translated into higher fees) resulted in decreases in the participation of prospective students from relatively poor families (*210*).	HECS has turned out to be very inexpensive in administrative terms (*237*). While around (2001). $800 million is currently collected per annum, it costs less than 2–3% of this to administer (*210*).
Middle- and low-income countries					
Expansion of public pre-primary school Uruguay Type 3 intervention – no evident presence of health sector	Resource-based intervention consisting in the expansion of the availability of public pre-primary school classrooms (ages 3–5) from 1995 to 2002 (around 784 more classrooms provided).		Significant and positive effect on school attendance and retention. By age 15 treated children have accumulated 0.8 extra years of education and are 27 percentage points more likely to be in school compared to their untreated siblings (*81*).	The effect on school attendance was larger for children of mothers with lower levels of education (*81*).	The estimated rate of return to the intervention ranged from 16% to 14% and benefit–cost ratios from 2.5 to 19 (depending on discount rates and other assumptions) (*81*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Programa Integral de Desarrollo Infantil (PIDI) Bolivia Type 2 intervention – some involvement of health sector	Resource-based early child development intervention where child care is provided in homes of women in low-income areas. Food is provided (70% of nutritional needs), and health and nutrition monitoring and educational activities offered. It is a full-time and free programme.	Negative impact (7 to 9 percentage points) on weight-for-age for short programme exposure (less than 12 months) (*238*).	Positive impact on all skills (2% to 10%) for children who had been in the programme for at least 13 months (*238*).	Targeted at families in low-income areas.	
Preschool meals programme Kenya Type 1 intervention – the intervention falls within the health sector's control	Resource-based programme that provided subsidized breakfast in 25 preschools, randomly chosen from a pool of 50 schools.	There was no impact on cognitive abilities or on the children's height or weight (*239*).	Children in the treatment group participated in school 29% of the time, versus 21.8% in the comparison group. The programme improved learning, but only for children in schools where the teachers were better trained at the onset of the programme (0.4 of a standard deviation) (*239*).	Not assessed.	Not assessed.

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
School report cards Pakistan Type 3 intervention – no evident presence of health sector	Information-based school intervention that provided school and child-level learning report cards in half of the villages of Pakistan.	Not assessed.	Report cards improved learning by 0.1 standard deviation and decreased private school fees by 18% (*240*).	The results are especially large for private schools that were below median baseline test scores (at 0.34 standard deviation) (*240*).	The upper-bound cost of the exercise was $1 per child. The costs of providing information to the entire population was comparable to the fee reduction in initially well-performing schools. Considering only the welfare of children and households for a cost–benefit analysis would always lead to a positive result (*240*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
School-based HIV/AIDS prevention programme in rural areas Nigeria Type 1 intervention – the intervention falls within the health sector's control	Teacher-led, peer education and combined programmes developed among secondary school students in Ibarapa district.	All three intervention schools showed significant knowledge gains. Increase in knowledge was greatest (+5.0 points) for combined strategies. The intervention schools showed a significant positive shift in attitude towards use of contraceptives with mean increase between 0.5 and 0.9 points. Scores that measured the students' perceived self-efficacy for safe and reported condom use were significantly higher, especially for combined strategies (*116*).	Not assessed.	Not assessed.	Not assessed.

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Sociedad de Fomento a la Educación Superior (Society for the Promotion of Higher Education) Mexico Type 3 intervention – no evident presence of health sector	The Society for the Promotion of Higher Education is a student loan programme implemented at private universities, which provided financial aid to lower-income and high-talent students.	Not assessed.	Students who receive some kind of financial support have a 24 percentage point higher chance of university enrolment. The GPA improves by 3% (or 25% of the standard deviation), although the results from the discontinuity regression analysis are smaller. Survey data however suggest that the likelihood of working on the side increases by 8 percentage points (*213*).	Targeted at low-income students (*213*).	Not assessed.

Note: The table describes impacts from a non-exhaustive list of programmes with the aim of covering examples from different regions of the world and development or welfare contexts.

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CHAPTER 5. Can social protection act as health policy?

5.1 Efficiency-based rationales

5.1.1 Economic benefits of social protection and the presence of market failures

The arguments to invest in safety nets and social security systems have traditionally revolved around three main objectives, which are in turn related to important market failures:[17]

- Diminishing the risk of catastrophic expenditures that can be generated by life events such as death or unemployment, and which could easily push individuals and families into poverty. Conventional or private insurance markets do not provide adequate coverage against these circumstances for the people who are most vulnerable to them, and imperfect information and lack of access to financial resources prevent many individuals from protecting themselves and their families through such mechanisms.
- Facilitating associated positive externalities, such as those related to preserving and increasing consumption and investments in human capital and productive activities by the poorest groups as they reach some degree of financial stability. The lack of adequate information about the potential benefits of human development or productive investments, or conflicts of interest regarding the use of resources within the household, may lead to inefficient outcomes (*1–8*).
- Allowing the compensation of potential damages to those groups or individuals that have been adversely affected by the adoption of certain policy reforms.

Large or repeated shocks can force people to sell off their productive assets or cut down on human development investments for the sake of sustaining nutrition and consumption. Health shocks have been found to have large effects on consumption in countries such as Indonesia (*9*). Children affected by the 1980s crises in Zimbabwe and Ethiopia were found to experience height and education deteriorations 20 years later (*10, 11*). Social insurance and social assistance can protect family investments in education and health, allowing children to stay in school or granting certain nutritional standards in the face of financial shocks. This, in turn, can translate into substantial social savings in the future, and into benefits in the form of a better-prepared and more productive workforce and more cohesive societies. In South Africa, for instance, labour market participation among those receiving cash transfers increased by 13–17% compared to similar non-recipient households (*12*). The old age pension scheme in South Africa appears to have beneficial health and nutrition effects on young children, and to reduce child labour (*13*). A review of social protection impact evaluations, the majority of which are conditional cash transfers, showed that safety nets improved immediate consumption, current economic activities, investments in human capital, and abilities to mitigate the negative effects of shocks (*14*).

Several social protection policies are geared towards ensuring adequate nutrition during childhood. Inadequate nutritional standards during childhood can have long-term impacts, especially in developing countries. Low birth weight has been shown to have large and statistically significant negative effects for developmental levels (*15, 16*). Different studies have shown that children's nutritional status determines adult labour market outcomes via affecting educational attainment and performance (*17–21*). Breastfeeding, for instance, plays an important role for children's nutrition. In high-income contexts it is associated with the increased probability of being in excellent health at 9 months (*22*). Furthermore, it is protective against obesity in later life, improves cognitive outcomes and may have long-term benefits related to blood pressure and total cholesterol and performance in intelligence tests (*23–25*). In the case of developing economies, a recent study in Bangladesh shows that infants breastfed at birth have significantly better chances of survival (*26*).

Social protection can operate as a driver for economic growth and overall development, and can play a key role during macroeconomic crises. As recognized by most international development organizations, effective social protection instruments are relevant means for long-term inclusive growth, as they allow capital accumulation and

[17] As the evidence citations are intended to be useful to intersectoral dialogue and action, the evidence referred to in this chapter focuses mostly on social protection measures beyond specific protection for access to health services. But in some instances, reference is made to the literature on the specific measures to address social determinants, in particular related to nutrition and perinatal programmes, which may in some contexts be provided by health services with little collaboration with other sectors, while in other contexts they may form part of intersectoral or integrated social programmes.

investment, improve labour capacity and productivity, contribute to risk management and offer diverse potential advantages to non-beneficiaries ("multiplier effects"). The potential macroeconomic role of social protection instruments as automatic stabilizers for urgent fiscal stimulus has been recognized internationally (*27, 28*). There is evidence that redistribution of spending power from upper- to lower-income groups through transfers can increase national spending on local goods, supporting national enterprises and improving the trade balance (*12, 29*). Social protection is additionally associated with social stability and less conflict and delinquency (*14*). Additionally, social protection can reinforce the positive impact of macroeconomic policies, benefiting groups that might otherwise be disadvantaged by economic growth strategies such as lowering import tariffs or reducing subsidies (*30*).

5.1.2 Does social protection have an impact on health?

While there are important methodological challenges to assessing the causal impact of social protection systems on health, some evidence exists in favour of such a link. Some research highlights the potential role of social protection regimes in predicting population health outcomes. The type of welfare state accounted for 20% of the difference in infant mortality rates and for 10% of the differences in low-birth-weight rates across 19 developed countries. A comprehensive social protection system often resulted in better population health outcomes, due to the role of welfare services and health systems (*31*).

Social insurance (or lack thereof) can have considerable effects on health and its social determinants. For example, elderly people affected by the 1996 pension crisis in the Russian Federation, which left around half of the country's pensioners without benefits for more than six months, were 5% more likely to die in the two years following the crisis (*32*). With regard to unemployment insurance, the states with higher benefits in the United States have significantly lower cardiovascular disease incidence rates (*33*). In addition, more generous parental leave systems in Europe have been found to reduce deaths among infants and young children (*34*).

Targeted programmes, mostly conditional cash transfers, generally show positive direct impacts on health outcomes and on the social determinants of health throughout the developing world. A review of the existing evidence on the effectiveness of conditional cash transfers in improving access to care and health outcomes, in particular for poorer populations in low- and middle-income countries, concluded that most programmes showed a positive impact on the use of health services, nutritional status and health outcomes, assessed by anthropometric measurements and self-reported episodes of illness (*35*). A more detailed review of the efficiency impact of the specific programmes, presented in the following section, further confirms these findings.

5.1.3 Average impact of social protection interventions

Resource-based type 1 interventions that can be allied with the theme of social safety nets refer to the provision of services by the health sector itself and for this reason are not elaborated here in too much detail, given the more intersectoral focus. It is interesting however to note the impacts of some of the actions addressing health determinants from within health programmes that are often under the direct control of the health sector, but which, depending on settings, may require some intersectoral engagement. Evidence shows that social protection programmes that include a component aimed at improving the nutritional status of young children have a relevant impact on their long-term outcomes. Nutrition and supplementation programmes – which may stand alone (provided by the health sector) or be integrated with other social programmes – appear to be especially important for improving children's physical well-being and growth across countries, especially in middle- and low-income contexts (*36*). Nutritional programmes in Bangladesh, China, Colombia, Mexico and the United States resulted in positive outcomes, such as increases in the weight and height of participant children, and largely lowered rates of anaemia and iron deficiency (94% reduction in the case of the Bangladesh programmes) (*37–44*). Several nutritional supplementation programmes in Bangladesh and Guatemala also showed positive results not only in terms of children's growth and diet, but also with regard to cognitive, educational and labour market outcomes later in life (*45–52*).

Scarcely evaluated breastfeeding promotion information or incentive-based programmes are effective in increasing this practice. A recent comprehensive review of studies on the effect of different interventions aimed at promoting breastfeeding found that health education and peer support can result in improvements in the number of women beginning to breastfeed (*53*). This has been attributed to the fact that these kinds of programmes entail a relevant cultural component. Two interventions in Scotland (Feeding Support Team, breastfeeding peer coaching in rural areas) showed a positive effect on the number of women who breastfed (*54, 55*), while a third one (breastfeeding groups in deprived areas) did not prove to be effective (*46*). Company-based interventions in the United States helped increase the breastfeeding period for participant women (*56, 57*).

Resource- and incentive-based disease prevention and prenatal care type 1 interventions can help counteract early child health impairments, especially in developing contexts. Evaluations of specific prenatal interventions across countries, including Argentina, India, Somalia, Ukraine, the United States and Zambia, suggest that this kind of programme can have positive effects for the health of both mothers and children (*37, 39, 40, 58–65*). Evaluations of the United States Supplemental Program for Women, Infants and Children (WIC) concluded that the intervention helped raise average birth weight (*37, 39, 40, 63*). In Bolivia, Guatemala, Indonesia and Nigeria maternal mortality and perinatal mortality declined as a result of programmes that provided better equipped health centres and trained nurses and midwives (*66*).

Information-based type 2 parenting programmes aimed at improving parental care skills before and after birth can improve children's developmental outcomes. Although a recent review of studies on these programmes concluded that their effects remain largely unknown (*67*), the assessment of impacts of specific parenting programmes suggests that parents do improve their child-rearing and child stimulation techniques as a result, which in turn leads to improved cognitive, language, motor, social and other skills for children, and evidence indicates that they can have positive effects for mothers, such as reduced maternal depression rates (*16, 36, 68–73*).

Incentive- and resource-based parental leave type 3 interventions show some potential to improve early developmental outcomes of children, especially regarding health. Studies indicate that women's return to work in the first year after birth can have a negative impact on children's cognitive development, school readiness and thus reading and mathematics abilities at 5 and 6 years of age (*74, 75*). In Guatemala and Haiti, maternal employment was associated with lower nutritional status for children under 1, but superior nutritional status for children aged 1 to 2 (*75*). However, other research on the effects of parental leave extension suggest that it does not have a direct significant impact on children's health outcomes, although it does have an influence on the time that the mothers stay away from work and thus the time that they breastfeed and dedicate to seeking immunizations (*76*).

Evidence on the health effects of social protection is particularly convincing for resource- and incentive-based cash transfer programmes. The South African Child Support Grant, a cash transfer and means-tested programme targeting poor women with no conditions attached, had large significant nutritional effects on the height of children that stayed in the programme for over 18 months (*77*). The programme also increased prenatal and postnatal visits to health care facilities by 65% and reduced home births (*78*). In Malawi, cash transfers to adolescent girls increased school attendance and decreased early marriage, pregnancy, self-reported sexual activity and HIV prevalence among beneficiaries over one year (*79*).

Transfer programmes that do not specifically aim at improving children's health outcomes also show positive health-related effects. Egypt's Social Fund for Development, targeted at the poor, reduced annual household spending on health by 18% and lowered the under-5 mortality rate by 6 per 1000; however, education and sanitation spending benefited wealthier villages more than poorer ones (*80*). Juntos, an income transfer and service programme in Peru that aims to improve human development, resulted in a 61% increase in immunizations among children aged 1–5 years (*81*). The South African Old Age Grant was associated with improved school attainment among boys, with a significant impact among girls (*82*). Duflo (*13*) found that children in households with one member receiving a pension have better height-for-age and weight-for-age indicators. The Nepal Poverty Alleviation

Fund showed statistically significant causal benefits in terms of key welfare outcomes, including consumption, food insecurity and school enrolment (*83*).

The effects of conditional cash transfers such as Progresa/Oportunidades in Mexico have been particularly well researched. In the case of Progresa, around 70% of the income transfer was used for increasing food quantity and quality (*84, 85*), which reduced the probability of stunting and increased the annual mean growth rate by 16% for children (*86–89*). Additionally, the programme significantly raised the utilization of public health clinics for preventive care and lowered the number of inpatient hospitalizations (*88*). As a result, the treatment group experienced an almost 3% increase in their measles immunization rates (*90*). Overall, Progresa led to a 22% decrease in the probability of children younger than 3 years of age having been ill in the past month (*91*). The continuation of Progresa, the Oportunidades programme, in turn demonstrated that an increase in cash transfers was associated with higher height for age, lower prevalence of stunting, lower prevalence of being overweight, and better motoric and cognitive development among children (*92*).

Cash transfer programmes with health-related conditions appear to be especially effective. The Red de Protección Social in Nicaragua, for instance, reduced stunting by 6 points – an unprecedented decline in such a short period of time – and the proportion of underweight children aged 0–5 years, partly through increased dietary diversity (*93*). Familias en Acción in Colombia in turn decreased the prevalence of diarrhoea in urban areas (*94*) and resulted in an average weight increase of 0.58 kilograms among newborns (*35*). Children's intake of protein and vegetables and the probability of adequate vaccination increased considerably (*95*). Fernald and Hidrobo (*96*) found that rural infants and toddlers benefiting from the Ecuador Bono de Desarrollo Humano had significantly greater vocabularies and were more likely to have received vitamin A or iron supplementation. Bolsa Família in Brazil was found to increase gestation periods, body mass index, immunization rates and school attendance among children. Janani Suraksha Yojana in India, the largest conditional cash transfer programme in the world in terms of the number of beneficiaries being reached, significantly increased antenatal care and in-facility births, especially in low-income states, and reduced perinatal and neonatal deaths by 3.7 and 2.3 per 1000 respectively (*59*).

Conditional cash transfer programmes also entail other benefits. Most conditional cash transfers that have been evaluated to date are found to have large positive effects on school enrolment, by between 2% and 13%, although not performance (*93, 97–105*). Some programmes, such as Oportunidades, appeared to increase school enrolment even among children who were ineligible for transfers, probably as a result of peer effects (*106*). This educational impact could in turn translate into improvements in future labour market outcomes (*99*). On the other hand, social protection programmes can contribute to overcoming problems related to imperfect credit markets, and allow higher risk uptake among beneficiaries (*107–111*). Around 12% of Progresa beneficiaries invested some of their cash into productive activities (*112*), while Mexico's Oportunidades programme improved consumption and asset accumulation for participants, but also for non-participants (*113*).

5.2 Equity-based rationales

5.2.1 Equity aspects in social protection

Social protection is the main mechanism available to governments for making growth pro-poor or more inclusive. It allows the redistribution of some economic development gains and helps ensure that shocks do not reverse them. Extensive evidence from a range of impact evaluations shows that different types of social protection interventions are successful at reducing the depth and severity of poverty and income inequality (*109*). For instance, social transfers other than pensions are found to reduce poverty risks by between 19% and 50% across EU-27 countries (*114*).

Social protection can also help break the intergenerational transmission of poverty and inequality. There is some evidence that the link between socioeconomic disadvantage and children's emotional, intellectual and behavioural development functioning is mediated by parenting (*115–117*). Improvements in mother's education and income in the year of birth and the year before birth

seem to limit the degree to which child health is affected by family circumstance in developing countries (*118*).

Maternal education is a key aspect for the reduction of social and health inequalities. A study from Mexico, for instance, indicates that health care access, proxied by breastfeeding and vaccinations, has significant positive effects on children's cognitive outcomes and that it is positively affected by maternal education (*119*). The positive effects of breastfeeding on children's development and on adult outcomes such as obesity and other health conditions have been widely documented (*22–26, 120*). Other studies have found persistent adverse effects of first-year maternal employment on breastfeeding and on measures of children's cognitive development (*34, 75, 120–126*), particularly in the case of mothers with lower education (*127*).

5.2.2 Equity impacts of interventions

Interventions targeted at children and parents can help reduce inequities. Many of the nutritional interventions evaluated to date have been shown to be effective in improving the situation of children from disadvantaged backgrounds. Even when that is not the case, higher returns are observed for more vulnerable communities or groups (*128*). The United States WIC programme, for instance, showed a higher effect in the case of children born to women with lower levels of education or generally disadvantaged women (*40*). Other interventions have a more significant impact on particularly vulnerable groups or localities, such as Brazil's Family Health Programme, the measles vaccination programme in Bangladesh or the Honduras Atención Integral a la Niñez Comunitaria (*129–131*). A review of different parenting programmes concluded that home visits entail benefits to families through changes in maternal parenting practices, the quality of the home environment and children's development, especially for low-income, first-time adolescent mothers (*132*).

Cash transfer schemes appear to have successfully reduced poverty and inequality throughout developing countries (*133, 134*). Oportunidades in Mexico reduced the poverty headcount ratio by 10% and the poverty gap by 30% (*135*). Social pensions and transfers in South Africa translated into a 47% decline in the poverty gap (*12*). The Jamaica Food Stamp Programme also affected measures of poverty during the devaluation of the Jamaican dollar in the early 1990s, and households with elderly members and young children benefited most from the programme (*136*). In Brazil the combination of the continuous cash benefit – a means-tested pension and disability grant – and the Bolsa Família contributed an estimated 28% of the fall in the Gini coefficient between 1995 and 2004 (*137*). Bolsa Família in Brazil resulted in turn in a 16% fall in income inequality and a 33% fall in extreme poverty between 1999 and 2009 (*138–140*).

Conditional cash transfers have generally been found to be more effective among households that are poorer or more vulnerable at baseline. The Japan Fund for Poverty Reduction programme in Cambodia had a 50 percentage point higher impact on enrolment for girls in the poorest two deciles of a composite measure of socioeconomic status, compared to a 15 percentage point difference for girls in the richest two deciles (*101*). Oportunidades in Mexico also showed larger effects for children with the lowest propensities to enrol in school at baseline, and only significant growth-related effects for children from households with below-median socioeconomic status (*89, 99*). The Bono de Desarrollo Humano programme in Ecuador showed larger positive effects for the poorest children, who displayed improved cognitive outcomes, less behavioural problems, higher haemoglobin levels and better motor control, and higher school enrolment (*141, 142*).

5.3 Value for money

Despite the increasingly large body of evidence on the positive impacts of social protection programmes, evidence of the value for money of this kind of interventions remains scarce. The cost–effectiveness of social transfer programmes is extremely challenging to determine, partly because full costs are difficult to obtain and partly because impacts (effectiveness) are difficult to attribute and to quantify (*143*). A simulation exercise on the impact of alternative cash transfer programmes on school attendance and poverty among Sri Lankan children, for instance, found that cash transfer programmes targeting poor children would be the most cost-effective way to reduce child poverty and encourage school attendance (*144*).

Regardless of the difficulties entailed in such effort, some studies have tried to assess the potential returns of insurance-based interventions. It has been estimated that the costs of providing maternity leave coverage and early child care for a year are compensated by income tax revenue raised when mothers continue employment (*145*).

However, comprehensive studies that evaluate the value for money of interventions barely exist, and most of them have focused on safety nets. One such analysis is provided for the Colombian conditional cash transfer programme Familias en Acción, which estimated a ratio of benefits to costs of 1.59 (*146*). The benefit-to-cost ratio of the comprehensive Challenging the Frontiers of Poverty Reduction programme in Bangladesh was estimated to range between 3.12 and 6.23 (*147*). The internal rate of return of the conditional cash transfer programme Progresa has also been estimated to range between 8% and 17% (*112, 148*). The increase in economic activity caused by the Dowa Emergency Cash Transfer project was estimated to be well over twice their value (*149*). The Procampo intervention in Mexico, introduced to compensate farmers for the anticipated negative effect of the North American Free Trade Agreement on the price of basic crops, was found to have an indirect multiplier effect (through multiplication of the liquidity received) ranging from 1.5 to 2.6 (*150*).

Social protection programmes targeted at young children and their parents have commonly shown net benefits. Cost–benefit analysis suggests that $1 invested in an early childhood nutrition programme in developing countries could potentially give at least $3 return in terms of academic achievement (*21*). According to a recent study, targeted interventions could result in higher cost savings than population-based interventions for young children (aged 0–6 years), whereas a population-based approach could yield greater economic net benefits for adolescents (aged 13–18 years) (*151*). It is estimated that the United States WIC programme would save $1 billion in federal, state, local, and private payer expenditures (*152*). Cost–effectiveness estimates of home visiting programmes to avoid children maltreatment ranged from $22 000 per case of maltreatment prevented to several millions. Seven of the 22 programmes of at least adequate quality were cost saving when including lifetime cost offsets (*153*). Different evaluations of parenting programmes also showed positive benefit-to-cost ratios, such as the home-visiting Nurse-Family Partnership in the United States (see table 5.1). Vaccination programmes (frequently delivered through schools) appear to be one of society's best potential health care investments, as they generally show much higher societal benefits than costs (*154–156*).

The adequate financing of social protection programmes remains a key challenge. Decisions regarding the suitability and affordability of social protection instruments need to be informed by the assessment of potential impacts in each country context, and in the framework of overall social policy and budgetary decision-making (*29, 157*). Both fiscal and political space is required to introduce and sustain national cash transfer programmes. Political legitimacy for these interventions needs to be secured, as they normally target vulnerable groups that are not well represented among the establishment and entail high operational and administrative costs. The fiscal space for programme development is evidently more limited in developing countries, especially in low-income countries. Hence, while cash transfers have proved affordable in middle-income countries, the financing of an adequate level and coverage of cash transfers remains a major challenge in low-income contexts (*27*).

Potential trade-offs between targeted and universal transfers are to be considered, both in economic and political terms. Investing in improving the human development conditions of particular groups may be done at the expense of creating structural protection systems that can help improve overall population outcomes, and the relative costs of each option may differ depending on the specific context. The focus of social policy has shifted from universal policies towards means testing and targeting over recent years, especially in developing countries, where the choice has been limited by macroeconomic and aid policies. However, the experience in high- and middle-income countries is that universal access is important for ensuring support by the middle class to finance welfare programmes, while most studies seem to show that solely targeting the poor involves high administrative costs and requires capacity that often does not exist in developing countries (*158*).

5.4 Conclusions

Social protection interventions are justified from an efficiency perspective. The presence of market failures such as imperfect information concerning the benefits of investments in human development, lack of access to efficient insurance markets that can help households protect from risk, or the externalities related to the social gains from a better-prepared and able labour force or from the productive investments that require a minimum level of financial security, are some of the factors that provide grounds for the public provision of social and health insurance and safety nets.

The efficiency- and health-related impacts of such interventions are clearly demonstrated by the existing empirical evidence. This is particularly the case for targeted conditional cash transfers in middle-income and some low-income countries, which have been more systematically evaluated, or for some early child development programmes. Evidence on the effects of universal social protection instruments is, however, more limited, partly due to the associated methodological difficulties.

Equity concerns additionally explain the need for public efforts in the field of social protection. Social protection is the main mechanism available to governments for the redistribution of economic growth gains. The financial and insurance-related constraints that affect households and individuals in their decisions are largely determined by their socioeconomic status, and therefore the lack of access to such protection can potentially be transmitted throughout generations. Most of the interventions included and assessed to date appear to benefit the poor disproportionately, again especially in the case of safety nets.

Value for money assessments of social protection programmes can be strengthened in several ways. There is some evidence of the net benefits offered by, for instance, early child development programmes or some cash transfer interventions, although the cost–benefits of insurance-based and especially universal protection mechanisms remains more challenging. The financing of social protection and the potential trade-offs between universal and targeted mechanisms are key political questions that should be carefully considered and evaluated also from the social determinants of health perspective, which suggests using a combination of the two approaches.

The strengthening of the collaboration between the health and social protection sectors, where such collaboration does not already exist, would be recommended in light of the existing evidence. The improvement of health outcomes is often a major objective of social protection institutions. Stronger cooperation would therefore probably lead to improved results for both sectors. This is particularly true when approached from the social determinants of health perspective, as a key goal of social protection is to diminish social inequities.

Twelve key points

Efficiency-based rationales

- Investment in safety nets and social security systems has traditionally aimed to diminish the risk of catastrophic expenditures, especially for the poor, and to enhance the productive capabilities of the poorest groups as they attain some level of financial stability.
- Targeted programmes, mostly conditional cash transfers, generally show positive direct impacts on health outcomes and on the social determinants of health throughout the developing world.
- Social protection interventions aimed at improving the nutritional status of young children show positive long-term outcomes.
- Positive health impacts have been found in programmes aimed to improve breastfeeding practices, prenatal care, parenting skills, child vaccination and timing of maternal employment.
- Cash transfer programmes with health-related conditions appear to be especially effective.

Equity-based rationales

- Social protection is a major mechanism by which governments can make growth pro-poor and more inclusive, as it allows the redistribution of economic development gains.
- Social protection can help break the intergenerational transmission of poverty and inequality.
- Maternal education, for example with regard to breastfeeding and vaccination, is key to reducing social and health inequalities.
- Interventions targeted at children and parents, supported for example by home visits, can help reduce inequities.
- Publicly funded health insurance programmes show especially positive effects for the most vulnerable populations.

Value for money

- The cost–effectiveness of large-scale social transfer programmes is extremely challenging to determine, as full costs are difficult to obtain and impacts are difficult to attribute and quantify.
- However, some studies have identified promising net benefits derived from insurance-based interventions, safety nets and social protection programmes targeting young children, though the adequate financing of programmes remains a challenge.

Table 5.1 Social protection interventions: summary of health, economic and equity impacts

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
High-income countries					
Supplemental Program for Women, Infants and Children (WIC) United States Type 1 intervention – the intervention falls within the health sector's control	Resource-based intervention that provides supplemental foods, health care referrals, and nutrition education for low-income pregnant women, mothers, infants and below-5 children at nutritional risk.	Higher average birth weight (by 2 g), reduced rate of births of low and very low birth weight (by 25% and 44%) (*37, 39, 40, 63, 152*).	Not assessed.	Higher effect in the case of children born to women with lower levels of education or generally disadvantaged women (*40, 159*).	WIC would save an estimated $1 billion in federal, state, local, and private expenditures over 18 years. Costs to the federal government amounted to $296 million, but it avoided over $472 million in first-year Medicaid expenditures (*63*).
Parental leave Norway Type 3 intervention – no evident presence of health sector	Incentive- and resource-based intervention. Reform in parental leave increased mandatory paid maternity leave entitlements from 0 to 4 months and mandatory unpaid maternity leave entitlements from 3 to 12 months.	Not identified.	2.7 percentage point decline in high school drop-out rates. Weak impact on college attendance (*121*).	5.2 percentage point decline in high school drop-out rates for those whose mothers have less than 10 years of education. Effect is especially large for children of mothers who would take low levels of unpaid leave without the reform (*121*).	Not assessed.

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Breastfeeding promotion Scotland Type 1 intervention – the intervention falls within the health sector's control	Information-based intervention consisting in daily proactive and reactive telephone calls for ≤ 14 days after hospital discharge (*54*).	22 intervention women compared with 12 control women were giving their baby some breast milk and 17 intervention women compared with eight control women were exclusively breastfeeding (*54*).	Not assessed.	Not assessed.	The incremental cost of providing proactive calls was £87 per additional woman breastfeeding and £91 per additional woman exclusively breastfeeding at 6–8 weeks (*54*).
Nurse-Family Partnership United States Type 1/2 intervention – the intervention falls within the health sector's control	Information-based intervention consisting in regular home visits by registered nurses, beginning prenatally and continuing through the child's second birthday. The Nurse-Family Partnership curriculum focuses on encouraging healthful behaviours during pregnancy, teaching developmentally appropriate parenting skills, and improving the maternal life course (*132*).	In Elmira, children of low-income, unmarried mothers in the treatment group had fewer emergency room visits than controls (*132, 160*). Similarly, in Memphis, fewer accidents and injuries required treatment. Nurse-visited families also had lower child mortality. One child in the treatment group died, compared with 10 in the control group (*132, 161*).	48% decline in rates of child abuse and neglect at the time of the 15-year follow-up among low-income families who had received the intervention (*132, 161*). Significant effects on different aspects of the home environment in Denver, but not in Elmira or Memphis (*132, 162*). In Elmira, only the intervention children whose mothers smoked cigarettes before the experiment experienced cognitive benefits (*132, 163*).	Low-income, first-time mothers particularly benefited from the programme (*132*). In Denver, low-resource families showed modest benefits in children's language and cognitive development (*132, 164*). In Memphis, children of mothers with low psychological resources had higher grades and achievement test scores at age 9 (*132, 161*).	Benefits outweighed costs. Savings occurred through increased tax revenues associated with maternal employment, lower use of public welfare assistance, reduced spending for health and other services, and decreased criminal justice system involvement. For the higher-risk group in Elmira, each $1 invested yielded $5.70 in savings. For the lower-risk group, the saving was $1.26 per $1 invested (*132, 165*). For the full sample, the overall benefit–cost ratio was $2.88 (*132, 166*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Middle- and low-income countries					
Familias en Acción Colombia Type 2 intervention – some involvement of health sector	Resource- and incentive-based intervention that provides a nutritional subsidy of $15 per month for 0–6-year-old children on the condition that they attend growth check-ups and are vaccinated, and another transfer conditional on school attendance for children 7–17 years old.	Decreased prevalence of diarrhoea and 0.069 decrease in probability of being undernourished in infants. Increased intake of protein and vegetables and higher immunization rates for children under 2 years old (*94, 95*). Newborns increased average weight by 0.58 kilograms in one year (*167*), and 12-month-old boys grew 0.44 centimetres more (*95*).	Increases in school enrolment between 2% and 6% depending on the age group. 10.1 (5.2) percentage point increase in school attendance of children aged 12–17 in rural (urban) areas (*97*). Increased household consumption, by 9.3% (19.5%) in urban (rural) areas, and mostly on food (*97*).	The programme targeted the poorest households in disadvantaged municipalities.	Estimated ratio of benefits to costs of 1.59 (*146*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Progresa / Oportunidades Mexico Type 2/3 intervention – some involvement of health sector	Resource- and-incentive based intervention that provides a monthly stipend on condition that parents bring children to preventive medical care services and buy food to improve their nutrition. Oportunidades also provides an educational scholarship for children on condition that they attend at least 85% of the school year. All children receive regular medical check-ups.	70% of the Progresa transfer was used for increasing food quantity and quality (*84, 85*). Reduced probability of stunting of children and increased annual mean growth rate by 16% (*88, 168*). 3% increase in children's measles immunization rates (*90*). Overall 22% decrease in the probability of 0–3-year-old children having been ill in the past month (*91*). Increased utilization of public health clinics for preventive care and lower number of hospitalizations (*88*). Oportunidades showed that increasing transfers was associated with greater height for age, lower prevalence of stunting and lower prevalence of being overweight.	Oportunidades improved children's motor and cognitive development (*92*), and had a significant impact on school enrolment for children making the transition from primary to secondary school (*98, 100, 105*). Children that received Oportunidades transfers for two more years attained an average of one fifth more of a year of schooling (around 2% higher future wages on average) (*99*). It improved consumption and asset accumulation for participants and non-participants (*169*). 12% of Progresa beneficiaries invested cash into productive activities (*112*).	Progresa was associated with better growth in height among the poorest and younger infants (*87, 89*). Children living in the poorest intervention households tended to be taller than comparison children (*170*). Progresa reduced the poverty headcount ratio by 10% and the poverty gap by 30% (*135*). Oportunidades also appeared to increase school enrolment among children who were ineligible for transfers, probably as a result of peer effects (*106*).	The internal rate of return of Progresa has been estimated to range between 8% and 17% (*112, 148*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Institute of Nutrition of Central America and Panama (INCAP) mothers and children nutritional supplementation Guatemala Type 1 intervention – the intervention falls within the health sector's control	Resource- and incentive-based nutritional supplementation intervention, either through the provision of atole (enhanced protein-energy) or of fresco (moderate energy, no protein) prenatally and up to age 7 in four villages in Guatemala. Primary medical care was also provided.	Children of mothers who received atole grew faster than children of women who received fresco (*52*).	Exposure to atole before age 3 years was associated with higher hourly wages, but only for men (*48*). Increased grade attainment by women (1.2 grades) and speedier grade progression; a 0.25 increase in a test of reading comprehension for both women and men, and a 0.25 increase on non-verbal cognitive test scores (*50*). Better achievement for women exposed to atole than those exposed to fresco (*49*). Increased years of schooling of the average student by 0.6 years (*171*).	Not assessed.	The total annual cost of the programme was $23.25 per child per year. For children who participated in the programme for three full years, the present discounted value of the cost of the programme was $67.74 using a 3% discount rate and $65.88 using a 6% discount rate. Taking a 10% (5%) increase in wages as an upper (lower) bound and 3–6% discount rates, the present discounted value of the increase in wages from 0.6 more years of schooling is $622–$261 ($312–$131). The associated benefit–cost ratios are 9.19–3.96 (4.61–1.99) respectively (*171*).

Note: The table describes impacts from a non-exhaustive list of programmes with the aim of covering examples from different regions of the world and development or welfare contexts.

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CHAPTER 6. Can urban development, housing and transport policy act as health policy?

6.1 Efficiency-based rationales

6.1.1 Benefits of urban development, housing and transport infrastructure and the presence of market failures

The potential individual benefits of adequate urban infrastructure, including housing and transport, are large and evident. Urban development bears in this sense relevant implications for the quality of life and opportunities available to individuals through varied aspects, from access to services and employment to, for instance, the proximity of green areas. Adequate housing availability is associated with multiple positive outcomes for the individual related to health, education and employment, which can have a determinant impact for long-life opportunities and income, while transport is a clear facilitator for enhancing personal welfare (*1*).

However, the presence of "public goods" (in the economics sense) prevents the urban development sector from working efficiently. All decisions related to neighbourhoods entail a high level of uncertainty, given that urban development depends on a multitude of external factors that individuals cannot control. In this sense, urban development is affected by the fact that it usually relates to "public goods", including the environment, public spaces or services, for which no individual is to be held particularly responsible but from which all residents can benefit. Inadequate information and resulting insecurity can actually be exacerbated by different types of discrimination (*2, 3*).

Imperfect information in the housing sector can lead to inefficient outcomes. Accessing information on housing prices and goods is still expensive, and can be particularly challenging for some people, for instance new arrivals in an area who are not familiar with the local housing system or people who lack the necessary education. Additionally, the housing market does not properly reflect the utility of investments, and therefore private owners cannot readily realize their value or borrow to obtain the required finance. More generally, individuals tend to be risk averse, which reduces the incentives to invest. At the same time, housing supply inelasticity, which entails that it would not increase in proportion to demand, can lead to marked price rises in short periods of time (*2, 3*).

Additionally, there are potential externalities that must be accounted for with regard to urban development and housing. Direct externalities of housing and neighbourhood conditions generally relate to health. Poor housing, for instance, can encourage the spread of disease. As seen above, the benefits a family derives from living in a certain neighbourhood or house is affected by decisions made by their neighbours. Therefore, only owners that are confident that their neighbours will do the same would have an incentive to invest in enhancing their properties. Intergenerational externalities also arise, as financial markets are also imperfect and because the social discount rate is lower than the private rate, again generally leading to underinvestments in both new developments and improvements.

Different studies demonstrate the connection between the housing sector and economic growth (*4–6*). There is evidence, for instance, that public housing significantly contributes to local economies in the United States both in a direct and in an indirect way. It has been estimated that direct spending by public housing authorities is approximately $8.1 billion a year, while this spending generates another $8.2 billion in indirect and induced economic activity in the regional economies (*7*). For instance, every $1 spent on developing affordable housing appears to produce around $0.64 somewhere else in Iowa's economy (*8*). In addition, public housing rent subsidies help low-income workers obtain jobs and stay in otherwise unaffordable markets, therefore indirectly subsidizing employers (*7*).

Externalities and the potential emergence of monopolies in the transport sector provide grounds for public intervention in the market. There is wide consensus in the literature, in this regard, that the most relevant negative externalities concerning road transport are accidents, road damage, environmental damage, congestion and oil dependence (*9*). Additionally, transportation infrastructure can reduce pre-existing negative externalities, and generate large positive societal effects with regard to associated outcomes, including industrial growth. On the other hand, unrestrained competition in the sector, considering its peculiarities, could naturally lead to dominance by a single company, which raises questions about the public interest of access, availability and price of transport.

The transport industry bears large economic, social and safety implications. Transport supply in current times is a major industry, employer and consumer of raw materials, and a key component of national output (*1*). Efficient transport systems entail substantive economic and social opportunities and can result in positive multiplier effects, including access to markets or employment and additional investments. At the macroeconomic level transportation and the mobility it generates account for a large share of production. For instance, in many developed countries, transportation accounts for between 6% and 12% of GDP. At the microeconomic level, it is linked to producer, consumer and production costs. It is normally assumed that investments in transport are in fact wealth generating rather than wealth consuming, although this is not always the case.

6.1.2 Does urban development and infrastructure have an impact on health?

The physical environment where people live can have relevant impacts on their well-being, and particularly on health. There is growing consensus today on the implications of the urban environment, including transport, infrastructure provision and basic services, for people's health and healthy behaviours, and therefore for health inequities (*10–14*). Factors such as overcrowding, dampness, area reputation, neighbourliness, fear of crime and area satisfaction appear to be important predictors of self-reported health (*15*). Reviews of evidence on these connections highlight three main pathways: area characteristics, internal housing conditions and housing tenure (*16–18*).

Internal housing characteristics can have relevant effects for health outcomes, especially for children. Housing conditions, including temperature and humidity, can generate or aggravate respiratory health problems. Children's physical health particularly depends on the characteristics of the home in which they live (*19*). Overcrowding, for instance, has been linked with symptoms of psychological problems or worsening academic achievement regardless of a family's socioeconomic status (*20, 21*), with effects that can persist throughout life, affecting future opportunities and well-being (*21*).

Child poisoning, as an example, is often related to lead piping, paint or carbon monoxide, while injuries are normally associated with the lack of safety equipment. Lead poisoning is the most common cause of environmental disease in children (*22*), and entails irreversible effects that include reduced IQ, impaired growth and neurological development, and behaviour problems (*23–25*). Among adolescents, lead poisoning has been associated with antisocial behaviours such as bullying, vandalism, arson and shoplifting (*23, 26*). Lack of smoke alarms, fire extinguishers and sprinklers may exacerbate the risk of injury from fire (*18*).

Housing tenure additionally appears to have an impact on children's health outcomes. School-age children whose parents own their homes are less likely to exhibit behaviour problems (*27*), while for young adolescents, living in a rented home has been associated with a higher likelihood of psychological distress (*28*) and having a child before age 18 (*5*). In countries such as the Netherlands and the United Kingdom, housing tenure actually appears to mediate the relationship between education or income and health (*29*). High housing costs can prevent families from meeting other basic needs (*30*), which could in turn lead to heightened health or psychosocial problems (*17, 31, 32*). On the other hand, lower levels of behavioural and emotional problems have been found among children in families with higher-cost residences (*22, 33*).

A range of research evidence suggests that the availability of green spaces has a significant influence on health (*34*). The physical features of the neighbourhood (including the lack of resources and green spaces), disorder and violence can operate as stressors (*35*). Urban environments that lack public gathering places can encourage sedentary living habits, while the availability of attractive parks and open spaces can facilitate opportunities for exercise (*36, 37*). The built environment affects physical activity, through for example cycling and walking (*38–41*). In fact the chances of being physically active may be up to three times higher in environments with green areas, while the likelihood of being overweight or obese may be around 40% lower (*42*). Parks and civic spaces also increase the potential for social interaction and community activities (*43*).

Similarly, transport-related aspects are often cited as a major influence on health in the literature. WHO estimates that road traffic injuries account for 1.3 million deaths annually, and are the leading cause of death worldwide

among people aged 15–29, and the second for those aged 5–14. In particular, road accidents are one of the leading causes of years of life lost in most European cities (*12*). Road traffic represents a particular threat to children, which can be increased by the lack of safe play spaces, pavements and crossings, high traffic volume and speeds over 40 kilometres per hour, and a high density of kerbside parking (*44*).

6.1.3 Average impact of interventions

Programmes aimed at improving internal housing conditions show positive effects for health. A review of studies on the health effects of environmental changes in the United Kingdom confirmed that many of the interventions to improve internal housing conditions entailed positive effects with regard to general and mental health outcomes (*45*). Overall, warmth and energy efficiency interventions seemed to have the clearest positive health impacts. Interventions that reported the largest effects were targeted at vulnerable groups, including those with existing health conditions and the elderly (*17*). Another review of studies on interventions aimed at tackling a variety of housing-to-health pathways in the United States concluded that most studies reported a significant improvement in health (*46*).

Basic housing enhancements are associated with improvements in health outcomes. Environmental changes in the housing infrastructure to reduce risk of falls are for instance found to reduce fall-related injuries significantly (between 6% and 30%) (*47*). Having working smoke alarms installed in the home reduces death and injuries from residential fires (*48–51*). Homes with smoke alarms have a 40–50% lower fire death rate compared to homes without smoke alarms (*48*). Insulation, as shown by the experience in New Zealand, can improve the occupants' health and well-being as well as household energy efficiency (*52*).

Improved cookstove interventions show potential to decrease the burden of disease that the exposure to emissions entails in developing countries. Half of the world population, especially in developing countries, uses solid fuels and traditional stoves or open fires for cooking, lighting or heating, with very significant health as well as climate change impacts. Improved cookstoves have been disseminated as an alternative to reduce these impacts, although detailed evaluations of the economic benefits of improved cookstove interventions barely exist to date. An improved stove intervention in Nepal was found to reduce the average indoor air pollution level (*53*).

Resource- and incentive-based type 2 interventions to improve the internal housing conditions are found to be especially beneficial for children. It is estimated that recent declines in the incidence of elevated blood lead levels in United States children may be partially due to public funds provided for lead control in private low-income housing (*54*). A significant decrease in lead dust was observed in houses where windows were replaced (*55*). Improving housing conditions through the Healthy Housing programme in New Zealand, for instance, led to an 11% decrease in post-intervention hospital admissions for children up to 4 years old (*56*). Piso Firme in Mexico, which promoted a shift from dirt to concrete cement flooring, also significantly improved child health, with decreases in the incidence of parasitic infestations and diarrhoea, and the prevalence of anaemia. The programme had a similar absolute impact on child cognitive development to Mexico's conditional cash transfer programme Oportunidades. Additionally, adults were found to be happier, as measured by their degree of satisfaction with their housing and quality of life, and lower depression and stress rates (*57*).

Incentive-based type 2 transport programmes aimed at reducing or calming traffic seem to be generally effective in the prevention of traffic accidents and of pollutant emissions. Two reviews of studies of such interventions in Australia, Denmark, Germany, Japan, the Netherlands, Spain and the United Kingdom concluded that areawide traffic calming measures can reduce the risk of road traffic injuries by between 11% and 15% on average, and eventually deaths, although this association was less clear (*58, 59*). The implementation of 20 miles per hour (mph) zones in London, as an example, was estimated to reduce casualties by 42–45% for all road users, and fatalities (killed or seriously ill) by between 46% and 54% (*60, 61*). However, further rigorous evaluations of such interventions are needed (*62*).

Speed limit regulation has proven to be generally successful in decreasing the number of accidents and related casualties. Different studies analysing the effects of the 1995 national maximum speed limit repeal in the

United States found increases in road fatalities ranging from 3.2% to 37% on rural interstate highways (*63, 64*), and a 39.8% and 25.4% increase in serious and moderate injuries respectively (*65*). Most analyses of the effects of the repeal in specific states (Alabama, New Mexico, Utah, Washington) also found significant increases in total crashes and deaths, normally for the first year after the intervention (*66–69*). However, evidence from New York shows that the increase in speed limits from 55 to 65 mph was followed by a 28.3% decrease in absolute mortality (*70*).

Alternative traffic calming interventions similarly appear to reduce casualties and fatalities in road traffic accidents. In a review of impact of speed cameras in high-income countries, most studies reported a reduction in road traffic collisions and casualties, with the reduction in the vicinity of the camera ranging from 5% to 69% for collisions, 12% to 65% for injuries, and 17% to 71% for deaths (*71*). Comparable results were reported by a more recent review of similar interventions, with the reductions ranging from 8% to 49% for all crashes in the vicinity of camera sites (*72*). A review of studies from Australia, Singapore and the United States also reported that red-light cameras are effective in reducing total casualty crashes (*73*). A review of studies on the impact of street lighting suggests that it may prevent road traffic crashes, although further well-designed studies are needed to determine their effectiveness, particularly in middle- and low-income countries (*74*).

Other type 2 incentive-based policies show potential to reduce traffic accidents. Motorcycle helmets, for instance, are systematically found to reduce the risk of death and head injury in motorcyclists (*75*). All interventions for promoting the use of booster seats among 4–8-year-olds have demonstrated a positive effect, although most evidence is based on uncontrolled studies (*76*). Legislation on the use of bicycle helmets additionally appears to be effective in increasing helmet use and decreasing head injury rates, as well as non-legislative interventions such as the provision of free helmets (*77*). Evidence in this regard remains particularly scarce in low-income countries (*78*). Despite the potential of visibility aids to help detect pedestrians and cyclists, their effect remains largely unknown (*79*).

Evidence from different countries suggests that incentive-based measures to promote alternative transport modes can generate health gains. Each additional hour spent in a car per day has been associated with a 6% increase in the likelihood of obesity in the United States, while each additional kilometre walked per day was associated with a 4.8% reduction in the likelihood of obesity (*80*). A study in Los Angeles found in this regard that residents living in areas in a traditional grid system were up to 25% more likely to walk to work compared with residents in socioeconomically similar areas that were laid out specifically for cars (*12*). A review of interventions in Germany, the Netherlands, Norway, the United Kingdom and the United States found that overall, commuter subsidies and alternative provision (for example a new train station) had the strongest impact on modal shift (1% and 5% respectively) (*81*). The promotion of alternative transport modes also offers potential to decrease the number of vehicular traffic fatalities and casualties. Different interventions in the city of Bogota, in Colombia, aimed at improving public transport led to a 50% decline in traffic fatalities (*82*).

Many of these interventions entail a change in cultural values and social norms. This is particularly the case in developing countries and with regard to habits and behaviours that can be harmful for health, such as those related to water and sanitation, or physical infrastructure of housing, including the use of traditional cookstoves or dirt floors. Different interventions aimed at calming traffic, prompting a shift in transportation modes, or increasing the access to green and gathering areas across higher-income countries also involve a cultural transition, necessary to promote healthier behaviours. Measures that intend to raise awareness and change perceptions and behaviours in connection with safety-related issues in the house environment and with regard to transport, including those related to lead control in windows or piping, the use of fire alarms, or practices for obtaining driving licences and use of seatbelts and helmets, also enter the normative and cultural terrain.

6.2 Equity-based rationales

6.2.1 Equity aspects in urban development, housing and transport

Urban development, housing and transport are key determinants not only of current well-being but also of lifelong opportunities. As seen in previous sections, the physical environment where individuals live has significant implications, mediated by health, education, employment or safety outcomes, for their present well-being. At the same time, conditions such as poor housing, overcrowding, lack of basic services or inadequate infrastructures can affect the future prospects of millions of people throughout the world. It is widely accepted that a minimum standard of accommodation is a basic need, while the availability of adequate transport is also generally considered a necessity of life (*2*). However, families often do not have the purchasing power to afford good-quality accommodation, neighbourhoods and transport, which will in turn deprive their children of the social and economic opportunities that they entail. In this sense, it has been found that inequalities in unobserved community-level aspects help explain a larger share of self-rated health inequalities than individual-level characteristics (*83*).

In fact, the association between housing and neighbourhood conditions and health inequities appears to be largely mediated by income. Living in extreme-poverty neighbourhoods or with deteriorating physical features can have a negative effect on health outcomes, as measured by mortality, child and adult physical and mental health, and on health behaviours, mainly through reductions in physical activity, increased anxiety and social disorder (*84–92*). People living in the most deprived areas of the United Kingdom and the United States, as an example, were found to have the highest illness ratios, were more likely to report depression and had a higher incidence of coronary heart disease (*93–95*). Mixed-income neighbourhoods in turn are linked to health benefits for disadvantaged groups (*96, 97*).

Specific neighbourhood conditions, such as the availability of green areas or traffic, can bear relevant health equity effects. Evidence suggests in this sense that populations exposed to the greenest environments show the lowest levels of health inequality related to income deprivation (*98*). Residents in urban social housing who had views of trees and open spaces demonstrated a greater capacity to cope with stress (*99*). Access to green space also has a substantial positive effect on physical health for those from low-income groups (*98*). Children's participation in physical activity is also positively associated with publicly provided recreational and transport infrastructure (*100*).

Income inequalities also seem to mediate the connection between transport and health inequities. High traffic volume, and therefore higher pollution levels and risk of road traffic accidents, are particularly common in disadvantaged areas (*101*). In the United Kingdom, children in the poorest families are four times more likely to be involved in traffic accidents than children from the wealthiest families. In the United States, drivers from low-income areas register higher accident rates than those from rich areas (*102*). The lack of access to adequate transport disproportionately affects older and disabled people, and those with low socioeconomic status, who in turn may have limited access to services such as shops and health care (*103*). They are likely to be especially vulnerable in environments dominated by private car use (*104*).

Given its high dependence on socioeconomic circumstances, the physical environment can help perpetuate intergenerational inequalities with regard to health. It has been widely demonstrated that factors such as the quality of the environment where they live, and the interactions with other people, strongly affect children's development (*105*), as families and their residences modulate children's behaviour and access to experiences and opportunities (*106*). Children who live in "unsafe" neighbourhoods may be exposed to greater risks of developing problem behaviours, including hyperactivity, aggression or withdrawal. Children who appear to be at a high risk for lead poisoning include those living in poor families, in inexpensive housing, or in rented or older homes, or those in communities with high rates of poverty or low ownership rates of residences (*22, 33*).

Neighbourhoods can be resource rich or resource poor, and thus can deter or boost the well-being of children (*107–110*). Children living in socioeconomically disadvantaged neighbourhoods are more likely to experience mental health and emotional problems, and adolescents may be more likely to use drugs, engage in delinquent behaviour, have sexual intercourse and become pregnant (*110–112*). School readiness, high school graduation rates, educational

achievement and even later annual earnings tend to be higher in socioeconomically advantaged neighbourhoods (*113–117*). A comparative study using data from 22 European and North American countries found that students from countries with the highest area deprivation reported poorer health than students in the least deprived countries (*118*).

These challenges are particularly evident in developing contexts. Many poor and marginalized groups live in slums and informal settlements in developing countries, where they are vulnerable to diverse health threats, which particularly affect children. For example, primary school attendance rates in Delhi, India, are much lower among children living in slums (54.5% compared with 90% for the city as a whole, according to data from 2004–2005) (*119*). In Bangladesh, the differences were even starker at the secondary level (18% of children in slums attended secondary school, compared with 53% in urban areas as a whole and 48% in rural areas, according to 2009 data) (*120*). While enrolment improved in the rural and non-slum urban areas of the United Republic of Tanzania, Zambia and Zimbabwe in the late 1990s, it worsened in urban slums (*121*).

6.2.2 Equity impacts of interventions

Resource-based type 3 public housing provision interventions can entail multiple benefits for vulnerable families, especially for children. Children in public housing projects may be less likely to lag behind other children (*122*) and more likely to achieve equivalent levels of education (*123*), and their families may experience fewer housing problems, such as overcrowding (*122, 124*), severe cost burden or low-quality housing (*124*). Privately owned assisted housing, however, appears to be less distressing than public housing (*123*).

Assisted housing interventions aimed at moving vulnerable families out of environments of concentrated poverty show relevant effects on health. Several residential mobility programmes in the United States (Moving to Opportunity, the Section 8 and the Gautreaux housing project,[18] the Yonkers and the Cincinnati interventions[19]) were found to improve reported overall health, distress and anxiety, depression, problem drinking, substance abuse and exposure to violence (*16, 125*). The Housing Allowance Experiment and Housing and Urban Development programmes were also found to improve self-reported health (*125*). On the other hand, the United States HOPE VI programme did not show any positive significant effects, since in the short term families were not generally able to rebuild their local social networks (*126*).

In particular, the Moving to Opportunity and Section 8 interventions provided evidence of the benefits that assisted private rental housing programmes can entail. Both interventions subsidized rental housing costs for families with income below 50% of the area median. Moving to Opportunity participants had to relocate to a lower-poverty neighbourhood, while Section 8 beneficiaries were offered a geographically unrestricted voucher (*17*). Section 8 children were significantly less likely to experience growth impairment related to malnutrition (*127*). Families that moved to low-poverty areas in general experienced improved outcomes in health and a reduction in problem behaviours for boys (*128–130*). Additionally, children and adolescents participating in the Moving to Opportunity programme in New York and Boston showed improved health and social outcomes, although the effects were mediated by gender in the case of health behaviours, with females especially benefiting (*16, 131*).

However, evidence from other programmes aimed at providing affordable accommodation to vulnerable groups is not so clearly positive. For instance, in the case of the Progressive Housing Programme implemented in Chile in 1991, the average income of the groups that benefited from subsidized construction was higher than the average income of non-beneficiaries for every quintile, and although the programme positively affected material conditions such as access to water, sewerage and electricity, it had a negative effect on overcrowding, and had no clear effects on other outcomes (for example poverty, school attendance, occupation ratio) (*132*). Targeted schemes, through which people with severe mental illness are located in one site with assistance

[18] All programmes used various combinations of Section 8 vouchers alone or plus counselling to allow families to move to private rented accommodation in more affluent areas. The Gatroux intervention, specifically, provided support to families to pay for private rental apartments in mixed neighbourhoods (less than 30% African-American).

[19] Which involved building new public housing units in low-poverty areas.

from professional workers, have potential for great benefit, although at the risk of increasing dependence on professionals and prolonging exclusion from the community (*133*). An Australian housing programme for indigenous people was found to have a significant impact on housing infrastructure but not on crowding or hygiene (*134*). On the other hand, a study of rental assistance for homeless and unstably housed persons living with HIV in Baltimore, Chicago and Los Angeles found favourable associations of housing with HIV viral load, emergency room use and perceived stress (*135*).

Regarding general urban development and transport interventions in high-income countries, the existing and scarce evidence of their equity impacts provides mixed results. Area-level interventions may be more cost-effective than moving individuals to better areas, and may benefit the community as a whole (*17, 136–138*). However, a review of the health impacts of urban regeneration programmes found a high variability in health-related effects, with some studies reporting improvements (in mortality) and others finding worsening outcomes (in self-reported health) (*14*). The potential of urban regeneration programmes to affect these risks is largely unknown, mainly due to the lack of outcome evaluations (*17*). According to several reviews, however, improved access to green spaces and nature has been shown to positively affect mental health (*12, 139*). With regard to the social distribution of effects of interventions aimed at promoting alternative and healthier modes of transport, they may increase health inequalities due to their focus on already motivated groups (*81*). The 20 mph zones in the United Kingdom were found to mitigate widening casualty inequalities (*61*).

Evidence of urban development interventions in lower-income countries focuses on slum upgrading and the provision of basic services and infrastructures, such as water and sanitation. It is estimated that 99.8% of the deaths associated with unsafe water, sanitation and hygiene are in developing countries, and 90% of them affect children (*140*). Upgrading projects in lower-income countries tend to focus on basic service provision for vulnerable communities, including infrastructure related to water and sanitation, waste collection, housing, access roads, footpaths or storm drainage. Several recent studies and reviews in turn suggest that improving water quality in the home can make an appreciable difference to health (*141*). A review and meta-analysis of water, sanitation and hygiene interventions to reduce diarrhoea, for instance through interventions such as the Water and Sanitation Extension Programme in Pakistan, found in this sense that most types of interventions had a similar impact, reducing diarrhoea by between 25% and 37% (*142*).

Specific interventions aimed at improving slum conditions show a variety of positive effects. Parivartan, a slum upgrading initiative in Ahmedabad (India), improved environmental sanitation conditions and health and reduced absence from work due to illness (*143*). The Orangi Pilot Project in Karachi (Pakistan), which tested innovative methods to provide adequate low-cost sanitation, health and housing facilities, resulted in improved environmental sanitation and a reduction in diseases. The Community-Led Total Sanitation Programme, which entails an innovative methodology for mobilizing communities to completely eliminate open defecation in Kalyani (India), reduced the incidence of waterborne diseases, gastroenteritis, stomach ailments and worm infestations, and improved control of the spread of polio. As a result of a community-managed toilet model in Tiruchirapalli (India), the incidence of diarrhoea decreased from 73% to 10%, and there was a reduction in the incidence of diseases such as malaria, typhoid and worm infections (*144*).

6.3 Value for money

Programmes to provide affordable housing to vulnerable groups are found to be beneficial in economic terms, although considering the wide range of programmes and contexts, more evidence would be required. A redevelopment of former gold mining land close to the downtown area of Johannesburg for affordable and middle-income housing in South Africa, for instance, showed very positive cost–benefit ratios over a 20-year study period (*145*). The United States federal housing choice voucher cost–benefit estimates indicate that the programme is likely to yield net social benefits (*146*). In the case of rental assistance for homeless and unstably housed persons living with HIV in Baltimore, Chicago and Los Angeles, the cost per QALY saved by housing services was $62 493, which compared favourably to other medical and public health services (*135*).

General urban improvement or development interventions also appear to potentially entail large quantifiable gains. For example, it is estimated the provision of green space that prompts a 1% change in the sedentary population in the United Kingdom could have an economic value ranging from £479 million to £1442 million per year, depending on whether older people (75+) are included in the analysis (*147*). However, evidence in this regard remains scarce and scattered, probably due to the difficulties entailed in measuring overall costs and benefits of such often broad-scope programmes.

Interventions aimed at improving the internal conditions of housing generally show large net benefits. A study estimating childhood lead poisoning prevention benefits compared to the costs involved (lead paint hazard control) in the United States concluded that lead-safe window replacement in all pre-1960 housing would yield net benefits of at least $67 billion (without including other benefits such as avoided attention deficit hyperactivity disorder, other medical costs of childhood lead exposure, avoided special education, and reduced crime and juvenile delinquency in later life). A recent study evaluating its long-term effects in the United States found that the net economic benefit of window replacement compared to window repair is $1700–$2000 per housing unit (*55*). The cost–benefit ratio of the Housing and Health insulation programme in New Zealand was estimated to be around 1.7 (*148*).

Measures to replace traditional solid fuel heating and cooking devices in developing countries also appear to be economically beneficial, individually and from a social perspective. Despite recent and substantiated critiques about the potential benefits of these programmes (*149*), a WHO cost–benefit analysis of interventions aimed at improving indoor pollution levels across countries by introducing liquefied petroleum gas (LPG) or improved stoves concluded that the financial benefits of halving the population without access to LPG by 2015 could amount to roughly $91 billion per year compared to net intervention costs of only $13 billion (*150*). The Mexico Patsari cookstove programme, for instance, showed benefit–cost ratios between 11.4:1 and 9:1 (*151*). Cost–benefit analysis also suggests that the investment in Nepal improved cookstoves was viable from both household and societal perspectives (*53*).

There is a large body of evidence of the large economic benefits of public transport interventions in high- and some middle-income countries. A study on the benefits of the subway system in São Paulo, Brazil, concluded that despite the elevated construction and operation costs of the subway, when environment and social values are considered, it is a profitable investment (*152*). The benefits of cycle networks are estimated to be at least 4–5 times the costs (*153*). Benefit–cost analyses of the public transit systems of 81 urbanized areas in the United States estimate that the aggregate benefit–cost ratio is 1.34 (*154*), while the analysis of rural public transit services in the state of Tennessee yields a benefit–cost ratio greater than 1.0 (*155*).

This is particularly clear in the case of certain traffic calming interventions. In the United States, motor vehicle inspection laws and the installation of seatbelts resulted in annual savings of $1.7 billion to $2.3 billion, and $162 per vehicle, respectively, with benefits outweighing costs by a factor ranging from 240 to 1727 (*156*). A cost–benefit analysis of 20 mph zones in the United Kingdom indicates a net present value per kilometre of road of £18 947 after 5 years and £67 306 after 10 years when 20 mph zones are implemented in areas with one or more casualty per kilometre of road (*61, 157*). It has also been estimated that the benefits of national implementation of intelligent speed adaptation in the United Kingdom would be up to 15 times its costs (*158*). The United States nationwide reduction of speed limits to 65 mph has the potential to save 2985 lives every year, which amounts to around $13 billion annual savings, including a $2 billion reduction in trauma care costs (*159*).

Although studies on the economic value of interventions in developing countries remain scarcer, relevant evidence exists for some programmes. The global economic return on interventions on sanitation and water is estimated to be $5.5 and $2 per $1 invested, respectively, while the total global economic losses associated with inadequate water supply and sanitation were estimated at $260 billion annually (*160*). A study aiming to identify and estimate the social costs and effects of a set of enforcement strategies for reducing the burden of road traffic injuries in sub-Saharan African and South-East Asian countries concluded that the combined enforcement of speed limits, drink-driving laws and motorcycle helmet use saves one DALY for a cost of $Int1000–3000 in the two regions (*161*).

6.4 Conclusions

Urban development, housing and transport bear relevant individual economic implications. There is a large body of evidence on the connections between the physical environment where people live and their current well-being and future opportunities. This is particularly evident in the case of health outcomes, which appear to be largely determined by accessibility to adequate housing and to healthy and safe urban environments and by transport conditions. However, the presence of significant market failures, including imperfect information in the housing markets and public goods and externalities in general urban development and transport, require the intervention of the public sector to ensure fully efficient outcomes.

The evaluation of specific interventions across all these sectors confirms the importance that they have for individual and social welfare. Interventions aimed at ensuring the affordability of housing, such as assisted rental programmes or measures to improve the internal conditions of housing, appear to have a positive impact on varied health-related aspects. General urban development interventions, including slum upgrading in developing countries, additionally show positive health effects, as well as traffic calming programmes, normally in the form of reduced fatalities and injuries from accidents. However, and as with regard to other sectors, most of the available evidence focuses on high-income liberal countries, specifically the United Kingdom and the United States.

Interventions in these sectors are also clearly justified from an equity perspective. This is related to their nature of basic needs, especially in the case of housing, and the high dependency of access on affordability and therefore on socioeconomic circumstances. Evidence on the equity effects of programmes remains however limited, largely due to the fact that many of these interventions specifically target lower-income individuals and families. The WHO Urban HEART (box 6.1) provides a potentially useful tool to effectively address health equity-related concerns in policy-making (*162*).

Studies on the value for money of interventions, although generally scarce, indicate that most of the interventions assessed entail net benefits when all potential effects are considered. This is especially the case with regard to interventions that improve internal housing conditions, which normally imply low costs and large health-related benefits, and traffic calming programmes, on which most cost analyses have concentrated.

Based on this non-exhaustive review, the collaboration between the health and infrastructure sectors presents important potential benefits. For the broad urban development sector, paying attention to the health-related impacts of policies can yield significantly higher returns, through improvements in the sustainability of interventions and creating better living conditions. For the health sector, in turn, the improvement of the social determinants of health associated with neighbourhood and housing conditions and transport is key for reducing health care expenditures and improving health-related conditions and inequalities. It has been estimated that poor housing in England costs the National Health Service up to £600 million a year (*163*).

Box 6.1 Urban HEART

The Urban Health Equity Assessment and Response Tool (Urban HEART), developed by the World Health Organization, aims to help urban policy-makers and communities better understand and tackle the local socioeconomic factors that influence health outcomes and inequities. The tool allows actors to identify and change the policies that perpetuate these inequities, and to prioritize those interventions that are most likely to improve health and reduce inequities, directly and through modifying the underlying social hierarchies and resulting conditions in which people grow, live, work and age. The tool is based on (a) sound evidence; (b) intersectoral action for health; and (c) community participation. It revolves around a planning and implementation cycle comprising four phases: health equity assessment, response prioritization, policy formulation, and programme development and implementation. Monitoring and evaluation take place during each phase. Urban health inequities are identified in the assessment phase. Evidence collected in this phase serves as the basis for raising awareness, determining solutions and promoting action. The response stage involves identifying appropriate policies and key actors, defining goals and establishing targets. During the policy stage, the most relevant interventions are prioritized and budgeted to ensure that they become part of the local government policy-making process. Health sector programmes implementing pro-equity health policies are complemented by other sectors' actions to bring about health equity (*162*).

Twelve key points

Efficiency-based rationales

- Urban development, transport and infrastructure have an impact on many aspects of personal, social and economic life, for example through provision of public spaces and green areas, quality of housing, provision of services, and interconnectivity and safety of transport systems.
- The health impacts of the physical environment in which people live are undeniable, with children being particularly susceptible to internal housing threats, such as lead or carbon monoxide poisoning, and temperature and humidity conditions; and external threats, such as antisocial behaviour and dangerous traffic.
- Programmes aimed at improving internal housing conditions show positive effects for health, for example through installation of smoke alarms, improved cookstove interventions, and a shift from dirt to concrete flooring.
- Resource- and incentive-based interventions to improve internal housing conditions are found to be especially beneficial for children.
- Various traffic-based interventions, such as traffic-calming infrastructure and imposition of speed limits, appear to have been effective in reducing accidents and pollutant emissions.

Equity-based rationales

- Urban development, housing and transport are key determinants not only of current well-being but also of lifelong opportunities, with conditions such as poor housing, overcrowding, lack of basic services and inadequate infrastructure affecting the future prospects of millions of people throughout the world.
- The link between living conditions and health inequities is strongly mediated by income, with life in extreme-poverty neighbourhoods having a negative effect on a range of health outcomes, as measured by mortality, child and adult physical and mental health, and health behaviours.
- The quality of the physical environment or neighbourhood can exert a powerful influence on children, with those dwelling in resource-poor areas being susceptible to a range of threats, including drug abuse, premature sexual behaviour, mental and emotional problems, and low school attainment and early drop-out.
- Assisted housing interventions, for example those aimed at moving vulnerable families out of environments of concentrated poverty, can entail multiple benefits for those families, especially children.
- General interventions, including urban regeneration, slum upgrading, and water and sanitation provision, have also shown positive effects in reducing inequities, though reviews of urban regeneration programmes have shown varying results.

Value for money

- Programmes providing affordable housing to vulnerable groups have been found to be beneficial, though more evidence is needed; general urban improvement interventions appear to entail large quantifiable gains; and interventions aimed at improving the internal conditions of housing generally show large net benefits.
- A large body of evidence exists on the economic benefits of transport-related interventions in high- and some middle-income countries, including for benefits resulting from reductions in harmful health impacts, though more economic evaluations are needed on the economic value of interventions in developing countries.

Table 6.1 Urban development, housing and transport interventions: summary of health, economic and equity impacts

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
High-income countries					
Moving to Opportunity (MTO) and Section 8 vouchers housing programme United States Type 3 intervention – no evident presence of health sector	Resource- and incentive-based interventions that subsidized private rental housing costs for families with income below 50% of the area median. MTO participants were required to move to a lower-poverty area and to remain in that area for a minimum of a year post-intervention. The Section 8 group was offered a geographically unrestricted housing voucher. The families contributed 30% of their monthly income to the rental costs, with the remainder being subsidized (*17*).	In Boston MTO children experienced fewer injuries or accidents; boys in MTO and Section 8 groups displayed fewer reported behaviour problems; reductions in the treatment of children's asthma attacks were reported. MTO and Section 8 parents reported better overall health (*128*). In New York MTO resulted in large improvements in mental health for boys. Section 8 children had lower levels of problem behaviour (*109, 137*). MTO and Section 8 adults experienced significantly lower obesity and MTO adults had a lower prevalence of mental health problems (*164*). Teen girls in MTO reported lower lifetime use of marijuana and tobacco, while teen boys reported significantly higher rates of smoking tobacco (*164*).	Section 8 groups in Boston MTO have values on a criminal offence index that are about one third smaller than the control group (*128*). Baltimore youths in Section 8 registered lower numbers of violent arrests and higher numbers of property arrest crimes (*165*). No effect is found in New York MTO on overall delinquency (*110*).	Targeted at low-income families.	For society as a whole, total benefits of the Section 8 vouchers (measured in annual, per recipient units) range from about $7700 to $9600, while total costs are about $7000; net benefits range from about $650 to $2800 per recipient case per year. The social benefit–cost ratio ranges from 1.1 to 1.37. The bulk of the benefits are experienced by voucher recipients, while other members of society bear the bulk of the costs (*146*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Traffic speed restrictions: 20 mph zones United Kingdom Type 2 intervention – some involvement of health sector	Resource- and incentive-based interventions that use regulation and road engineering to slow traffic in 20 mph zones. The zones are marked by terminal signs at the entrance and exit of the zone but it is not necessary to have signs for individual traffic calming measures within the zone (*61*).	It was estimated that they reduced casualties by 42–45% for all road users, and fatalities (killed or seriously ill) by 46–54% (*60, 61*).	The potential impact on emissions is being researched.	Although the number of casualties prevented in the most deprived areas was larger, the decline in casualties was not: around 48% of the decline of casualties was registered in least deprived areas compared to 38% in most deprived areas. This suggests that the pattern of 20 mph zone distribution has only mitigated widening casualty inequalities (*61*).	20 mph zones become cost-effective after 10 years when a road has over 0.7 casualties per km. Cost per km of road for each 20 mph zone was calculated at a mean of £59 334.16 per km. Five/ten years after zones were implemented on roads in low-casualty areas, they had prevented casualties worth £23 344/£37 278 per km. Five/ten years after the restriction was implemented in high-casualty areas the benefits per km were estimated to be £78 940/£127 299. The net present value has been estimated to be £18 947 per km after 5 years and £67 306 after 10 years in areas with one or more casualty per km of road (*61, 157*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Housing and Health insulation programme New Zealand Type 2 intervention – some involvement of health sector	Resource-, information- and incentive-based programme that involved installing insulation in previously uninsulated houses (*148*).	Although not rigorously assessed, an average reduction in the number of GP visits was registered, as well as a decrease in the number of hospital respiratory admissions (*148*).	Reduction in days off school and in days off work for adults. Average electricity use fell (between 2001 and 2002) by 7% for the intervention group, but also by 3% for the control group (*148*).	Not assessed.	The cost of installing insulation in the houses was around $1800 per house. The total estimated tangible benefit, comprising tangible health and energy savings, amounts in present value terms to around $3110 per dwelling (*148*).
Rental assistance for people with HIV/AIDS United States Type 2 intervention – some involvement of health sector	Resource-based rental assistance for homeless and unstably housed persons living with HIV in Baltimore, Chicago and Los Angeles (*135*).	Favourable associations of housing with HIV viral load, emergency room use and perceived stress, which can be quantitatively linked to quality of life (*135*).	Not assessed.	Targeted at vulnerable populations.	The cost per QALY saved by the HIV-related housing services is $62 493. These services compare favourably (in terms of cost–effectiveness) to other well-accepted medical and public health services (*135*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Middle- and low-income countries					
Set of enforcement strategies for reducing the burden of road traffic injuries Sub-Saharan African and South-East Asian countries Type 2 intervention – some involvement of health sector	Incentive-based interventions assessed included enforcement of speed limits (via mobile speed cameras), drink-drive legislation and enforcement (via breath-testing campaigns), legislation and primary enforcement of seatbelt use in cars, legislation and enforcement of helmet use by motorcyclists, and legislation and enforcement of helmet use by bicyclists (aged <15 years) (*161*).	Enforcement of speed limits/drink-drive legislation, and legislation and enforcement of seatbelt use and motorcycle and bicycle helmets, were estimated to reduce long-term non-fatal road traffic accidents by 6%/15%/18%/19%/17% and mortality from accidents by 14%/25%/11%/36%/69% respectively (*75, 161, 166–176*).		The most vulnerable populations are at higher risk of experiencing traffic accidents.	The most cost-effective individual strategy varies by region – bicycle helmets in the African region, speeding control in the South-East Asian region – but a combined intervention strategy that simultaneously enforces multiple road safety laws produces the most health gain for a given amount of investment. The combined enforcement of speed limits, drink-driving laws and motorcycle helmet use saves one DALY for a cost of $Int1000–3000 in the two regions (*161*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Patsari improved cookstoves Mexico Type 2 intervention – some involvement of health sector	Resource- and incentive-based intervention aimed at encouraging the replacement of traditional cookstoves with an efficient woodburning cookstove called "Patsari", developed with a participatory approach to meet the needs of the targeted households (*151, 177*).	The percentage of households with members suffering from acute respiratory disease was reduced from 74% with the traditional stove to 30% with Patsari adoption. Eye discomfort was reduced from 70% in households using the traditional open fire to 8% when using the Patsari stove (*151*).	Households exclusively using fuelwood saved an average of 840 kg fuelwood per adult per year (67% reduction) while those using fuelwood and LPG saved an average of 548 kg fuelwood per standard adult per year (65% reduction) (*178*). The average reduction of cooking time per household was 1 hour per day. On a yearly basis women can spend 365 hours less of their time in the kitchen and can take advantage of this time saved (*178*).	Targeted at vulnerable households.	The yearly amount of money spent by rural households on health was $437 with $306 spent on acute respiratory diseases. This amount decreased 30% when households used the improved Patsari stove, which translates to $131 saved by each household due to the use of improved cookstoves (*151*). Benefit–cost ratios were between 11.4:1 and 9:1. The largest contributors were fuelwood savings and reductions in health impacts (53% and 28% respectively). Investment of $1 in this programme had a significant return from $8.70 to $11.10 (*151*).
Piso Firme Mexico Type 2 intervention – some involvement of health sector	Incentive-based intervention that offered households with dirt floors up to 50 square metres of concrete cement flooring (*57*).	The programme is associated with an 18.2% reduction in the presence of parasites, a 1.8 percentage point decrease in episodes of diarrhoea, and an 8.3 percentage point reduction in the incidence of anaemia (*57*).	The programme is associated with notable improvements in child cognitive development: treated children show a 36% improvement in the Peabody Picture Vocabulary Test score. The degree of maternal satisfaction with quality of life is 18.4 percentage points higher and depression scale and perceived stress scales are significantly lower in the treatment group (*57*).	Not assessed.	The cost of replacing dirt floors is a one-time $150 expenditure and yields a 36% increase in the Peabody Picture Vocabulary Test score, which compares favourably to the effect of Mexico's Oportunidades conditional cash transfer programme or early childhood development and nutrition programmes (*57*).

Intervention	Description	Health effects	Other effects	Equity aspects	Value for money
Water and Sanitation Extension Programme (WASEP) Pakistan Type 1/2 intervention – some involvement of health sector	Resource-, information- and incentive-based intervention designed to deliver an integrated package of activities to improve potable water supply at village and household levels, sanitation facilities and their use, and awareness and practices about hygiene behaviour (*179*).	Children not living in WASEP villages had a 33% higher adjusted odds ratio for having diarrhoea than children living in WASEP villages (*179*).	Not assessed.	Targeted at vulnerable populations.	Not assessed.

Note: The table describes impacts from a non-exhaustive list of programmes with the aim of covering examples from different regions of the world and development or welfare contexts.

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ANNEX A. Looking beyond GDP: broader measures of well-being, welfare and prosperity

New measures of well-being, welfare and prosperity that go beyond GDP and attach increasing relevance to equity and its associations with efficiency concerns have been developed in recent years. A significant increase in academic research on well-being can be noted since the mid-1970s, particularly expanding in the last decade (*1, 2*). Many cite Easterlin's 1974 paper on whether economic growth improves the human lot as a precursor in this field of research (*3*). The paper concludes that economic growth in a country does not necessarily lead to a rise in average levels of happiness, sparking a new interest that grew rapidly from the mid-1990s onwards. Since then, many authors have approached the study of the connections between income, equality and well-being.

Although the evidence on the relationship between income inequality and well-being has been mixed, it seems that most studies find a negative relationship between income inequality and well-being (*4, 5*). Where authors find a relationship, it seems to hold across countries (*6, 7*), across states in the United States (*8*) and in cross-city comparisons (*9*). Schwarze and Härpfer (*10*) used the life satisfaction question of the German Socio-Economic Panel survey and regional Gini inequality indices and found that the well-being of Germans is adversely affected by inequality. The results of Winkelmann and Winkelmann (*11*) strongly suggest that increased inequality lowers the income satisfaction of middle-class individuals, ceteris paribus, given own income, in Switzerland. This relationship seems to hold for children's well-being, as the average levels of children's well-being appear to be negatively correlated with both levels of income inequality and the percentage of children living in relative poverty (*12–14*).

Other studies indicate the relationship may be causal and depends on the perception of social mobility or opportunity. Using General Social Survey data from 1972 to 2008, Oishi et al. (*15*) found that Americans were on average happier in the years with less income inequality than in the years with more income inequality. They also demonstrated that the inverse relation between income inequality and happiness was explained by perceived fairness and general trust. However, the effect of income inequality on subjective well-being seems to partly depend on real or perceived social mobility (*8, 16*), so that if individuals perceive there is a good opportunity for social mobility, they will tolerate and therefore feel happier with a higher level of income inequality than if perceived levels of social mobility are low.

The economic crisis, among other recent trends (climate change, energy crisis) has strengthened this new strand of study. The new lines of work that approach welfare, prosperity and progress from a broader perspective have quickly expanded in these years, and are turning an issue that was considered marginal into the mainstream. The perception and evidence on the unsustainability of current development patterns strictly based on GDP growth are mounting, and although institutional obstacles to significant changes persist, an increasing number of experts and organizations are advocating and requesting political advance towards more inclusive and environmentally concerned economic growth.

International efforts to develop more encompassing measures of well-being have multiplied in recent years as a result. At the European level, the European Commission issued a communication on "GDP and beyond" in 2009, identifying key actions to improve current metrics of progress, and established five key targets to guide its policies in the European Union 2020 Strategy (*17*). To support these processes, the Statistical Office of the European Communities (Eurostat) and the French National Institute of Statistics and Economic Studies (INSEE) initiated a process to develop recommendations for the European Statistical System. The United Nations Economic Commission for Europe, in cooperation with the OECD and Eurostat, is pursuing work on measuring sustainable development, aiming to develop better metrics for human well-being and sustainability (*18*).

Several countries have consequently launched initiatives related to broader measurement of well-being. These efforts have taken the form of public consultations (United Kingdom), parliamentary commissions (Germany, Norway), national round tables (Italy, Slovenia, Spain), initiatives for integrating and disseminating statistics on a jurisdiction's economic, social and environmental conditions (United States), dedicated statistical reports (Australia, Ireland) and a range of other initiatives (China, France, Japan, Republic of Korea). The OECD Better Life Initiative is coordinating and supporting the different national programmes (*19*). The publication of the 2011 *Compendium of OECD well-being indicators* and the development of the Better Life Index respond to the

growing demand for measuring well-being and progress within the international statistical community (*20*).

An initiative that has gathered international attention and helped set an agenda for European countries is represented by the report of the Commission on the Measurement of Economic Performance and Social Progress (*21*). The final report concluded that the conventional measure of GDP does not accurately reflect the overall economic and social situation and future prospects, because (among other factors) it does not provide any indication of how the distribution of income is evolving. The lack of adequacy of the measures on which policy-makers make their decisions partly explains, according to the authors, the fact that the financial and economic crisis was not properly forecast. The report recommends that subjective measures of the quality of life should be collected by governments, and has played an important role in creating the widespread perception that measuring subjective well-being is a proposal worthy of serious policy attention (*21*).

Another early research effort in this direction was represented by the *Prosperity without growth?* report prepared by the (now defunct) Sustainable Development Commission of the United Kingdom (*22*). This publication went beyond the subject of measurement, and questioned the feasibility of transiting to a functional economic and social paradigm that is not strictly based on conventional economic growth from a macroeconomic perspective. Sustainable development is defined in the report on the basis of improving citizens' living conditions based on their expectations, which necessarily affects inequality concerns and social aspects that are intertwined with equity. In 2010 the United Kingdom Government mandated the Office for National Statistics to start measuring subjective well-being and constructing an index of national well-being, which would be finalized following public and expert consultation (*23*).

Arguments in favour of changes in political priorities towards higher equity and sustainability are progressively becoming embedded in public debates, particularly in industrialized societies. The growing work of experts across different disciplines who have produced various publications emphasizing the role of equity concerns for overall development and advocating a change in economic growth patterns is also driving this trend. Reference publications aimed at the general, rather than specialized, public in this regard in the last few years have multiplied (*24–29*).

Despite the fact that these new trends have not yet translated into practical policy actions, they bear significant implications for the discussion on interventions aimed at addressing the social determinants of health. Equity concerns are in this sense a central and common element to all these evolving approaches and theories, as a major determinant of social and individual well-being and of economic prosperity. The public debate on these issues does not seem to have permeated the policy-making sphere, despite all coordinated efforts, in the context of the economic crisis and its emergency requirements. In fact, many of the policy actions adopted recently in Europe are in clear contradiction with them, which suggests that the window of opportunity that the crisis offered to make substantial changes in this direction has been somehow missed.

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ANNEX B. Commission on Social Determinants of Health recommendations

General objectives	Action areas	Recommendations
1. Improve the conditions of daily life	Early child development	Ensure policy coherence for early child development
		Build universal coverage of comprehensive package of quality early child development programmes and services for children, mothers and other caregivers, regardless of ability to pay
		Provide quality education focused on children's physical, social/emotional, and language/cognitive development, from pre-primary school
		Provide quality compulsory primary and secondary education for all boys and girls, regardless of ability to pay, identify and address the barriers to girls and boys enrolling and staying in school, and abolish user fees for primary school
	Urban development	Establish local participatory governance mechanisms for communities and local government to partner in building healthier and safer cities
		Ensure greater availability of affordable quality housing
		Plan and design urban areas to promote physical activity through investment in active transport; encourage healthy eating through availability of and access to food; and reduce violence and crime through good environmental design and regulatory controls, including control of the number of alcohol outlets
	Rural development	Develop and implement policies and programmes that focus on issues of rural land tenure and rights; year-round rural job opportunities; agricultural development and fairness in international trade arrangements; rural infrastructure, including health, education, roads and services; and policies that protect the health of rural-to-urban migrants
	Climate change	Consider the health equity impact of agriculture, transport, fuel, buildings, industry and waste strategies concerned with adaptation to and mitigation of climate change
	Employment	Full and fair employment and decent work as shared objective of international institutions and a central part of national policy agendas and development strategies, with strengthened representation of workers in the creation of policy, legislation and programmes relating to employment and work
		Develop and implement economic and social policies that provide secure work and a living wage that takes into account the real and current cost of living for health
		Public capacity strengthened to implement regulatory mechanisms to promote and enforce fair employment and decent work standards for all workers
		Reduce insecurity among people in precarious work arrangements, including informal work, temporary work and part-time work through policy and legislation to ensure that wages are based on the real cost of living, social security and support for parents
		Occupational health and safety policy and programmes applied to all workers – formal and informal – and the range expanded to include work-related stressors and behaviours as well as exposure to material hazards
	Social protection	Build universal social protection systems and increase their generosity towards a level that is sufficient for healthy living
		Use targeting only as back-up for those who slip through the net of universal systems
		Ensure that social protection systems extend to include those who are in precarious work, including informal work and household or care work

General objectives	Action areas	Recommendations
1. Improve the conditions of daily life (Next)	Universal health care	Build health care services on the principle of universal coverage of quality services, focusing on primary health care
		Ensure public sector leadership in health care system financing, focusing on tax- and insurance-based funding, ensuring universal coverage of health care regardless of ability to pay, and minimizing out-of-pocket health spending
		Increase investment in medical and health personnel, balancing health–worker density in rural and urban areas
		Address the health human resources brain drain, focusing on investment in training and bilateral agreements to regulate gains and losses
2. Tackle the inequitable distribution of power, money and resources	Mainstreaming health equity in all policies and systems	Parliament and equivalent oversight bodies adopt a goal of improving health equity through action on the social determinants of health as a measure of government performance
		Establish a whole-of-government mechanism that is accountable to parliament, chaired at the highest political level possible
		Institutionalization of monitoring of social determinants and health equity indicators, and health equity impact assessment of all government policies, including finance
		Expansion of health sector policy and programmes in health promotion, disease prevention, and health care to include a social determinants of health approach, with leadership from the minister of health
		WHO supports the development of knowledge and capabilities of national ministries of health to work within a social determinants of health framework, and to provide a stewardship role in supporting a social determinants approach across government
	Fiscal policy	Build and strengthen national capacity for progressive taxation
		New national and global public finance mechanisms developed, including special health taxes and global tax options
		Donor countries honour existing commitments by increasing aid to 0.7% of GDP; expand the Multilateral Debt Relief Initiative; and coordinate aid use through a social determinants of health framework
		International finance institutions ensure transparent terms and conditions for international borrowing and lending, to help avoid future unsustainable debt
		Establish a cross-government mechanism to allocate budget to action on social determinants of health
		Public resources equitably allocated and monitored between regions and social groups, for example using an equity gauge

General objectives	Action areas	Recommendations
2. Tackle the inequitable distribution of power, money and resources (Next)	Market responsibility	WHO, in collaboration with other relevant multilateral agencies and supporting Member States, institutionalizes health equity impact assessment, globally and nationally, of major global, regional and bilateral economic agreements
		Ensure and strengthen representation of public health in domestic and international economic policy negotiations
		Strengthen public sector leadership in the provision of essential health-related goods/services and control of health-damaging commodities
	Gender equity	Create and enforce legislation that promotes gender equity and makes discrimination on the basis of sex illegal
		Set up within the central administration and provide adequate and long-term funding for a gender equity unit that is mandated to analyse and to act on the gender equity implications of policies, programmes and institutional arrangements
		Include the economic contribution of household work, care work and voluntary work in national accounts and strengthen the inclusion of informal work
		Invest in expanding girls' and women's capabilities through investment in formal and vocational education and training
		Support women in their economic roles by guaranteeing pay equity by law, ensuring equal opportunity for employment at all levels, and by setting up family-friendly policies that ensure that women and men can take on care responsibilities in an equal manner
		Increase political commitment to and investment in sexual and reproductive health services and programmes, building to universal coverage
	Political empowerment	National government strengthens the political and legal systems to ensure they promote the equal inclusion of all
		National government acknowledges, legitimizes and supports marginalized groups, in particular indigenous peoples, in policy, legislation and programmes that empower people to represent their needs, claims and rights
		Ensure the fair representation of all groups and communities in decision-making that affects health, and in subsequent programme and service delivery and evaluation
		Empowerment for action on health equity through bottom-up, grass-roots approaches, with support for civil society to develop, strengthen and implement health equity-oriented initiatives
	Global governance	By 2010, the Economic and Social Council, supported by WHO, prepares for consideration by the United Nations the adoption of health equity as a core global development goal
		By 2010, the Economic and Social Council, supported by WHO, prepares for consideration by the United Nations the establishment of thematic social determinants of health working groups
		Institutionalization by WHO of a social determinants of health approach across all working sectors, from headquarters to country level

General objectives	Action areas	Recommendations
3. Measure the problem, evaluate action, expand the knowledge base, develop a workforce that is trained in the social determinants of health, and raise public awareness about the social determinants of health	Monitoring, training and research	Ensure that all children are registered at birth without financial cost to the household
		Establish national health equity surveillance systems, with routine collection of data on social determinants of health and health inequity
		WHO stewards the creation of a global health equity surveillance system as part of a wider global governance structure
		Research funding bodies create a dedicated budget for generation and global sharing of evidence on social determinants of health and health equity, including health equity intervention research
		Make the social determinants of health a standard and compulsory part of training of medical and health professionals
		Act to increase understanding of the social determinants of health among non-medical professionals and the general public
		Build capacity for health equity impact assessment among policy-makers and planners across government departments
		WHO strengthens its capacity to provide technical support for action on the social determinants of health globally, nationally and locally

ANNEX C. Literature review: methodology

1. Initial search

Based on the proposed scoping review methodology of Shankardass (2010),[20] scholarly and grey literature was systematically searched for direct and indirect evidence of the impact of interventions in the sectors of early child development, housing, transport, social protection and education.

Search terms

A purposely broad list of key word combinations and phrases was used, including (but not limited to)*:

- "health equity"
- "cost–benefit analysis"
- "cost–effectiveness analysis"
- "intervention impact"
- previous four *and* "health", or "education" or "social protection / insurance / assistance / transfers", or "transport" or "housing" or "children / early child development"
- "early child development / transport / housing / education / social protection" and "health" or "economic".

* also in Spanish in SCIELO, PAIS.

Online databases/search engines and organizations/ journals websites used included:

- International Bibliography of the Social Sciences
- PubMed
- PAIS International
- EconLit
- Scientific Electronic Library Online (SCIELO)
- ScienceDirect
- Cochrane
- IDEAS/RePec
- Social Science Research Network
- International Initiative for Impact Evaluation
- NBER
- World Bank
- Lancet
- Child Care and Early Education Research Connections
- Education Resources Information Center.

Specialized journals have been reviewed under each specific sector.

[20] Shankardass K et al. A scoping review of intersectoral action for health equity involving governments. *International Journal of Public Health*, 2012, 57(1):25–33.

2. Screening

The screening stage identified articles/studies describing evidence, both direct and indirect, on the impact or potential impact of policy interventions in the above-mentioned sectors with implications for health, health equity, other economic-related outcomes and/or involving cost–benefit or cost–effectiveness analysis. The screening was conducted based on the presence of the criteria described in box C.1. A member of the research team participated in a multistep process to review abstracts – or in the case of some grey literature and some articles where the criteria could not be examined, full documents – to identify relevant studies.

Box C.1 Screening criteria

A resource was initially included in the review if it dealt with the sectors of transport, education, housing, health, social protection and early child development.

Whether the resource alternatively:

- assessed the impact of interventions on health/ health equity or the association between sector-related outcomes and health outcomes using quantitative methods described in chapter 3;
- assessed the impacts of interventions on educational/ labour market/macroeconomic outcomes or the association between sector-related variables and educational/labour market/macroeconomic outcomes using quantitative methods described in chapter 3.

Specific attention was paid to cost–benefit and cost–effectiveness analysis as compared to simple costings.

3. Sorting

Literature referring to interventions or economic impact analysis was then sorted by the research team by:

- date
- sector
- source
- whether it was a focused study or a review.

Only studies published after 1990 were included for the purpose of the report.

4. Scoping

A table for more comprehensive extraction of information was developed. The scoping table was applied to specific studies to describe specific confirmed cases, often following a full review of the article. It included the following scoping categories:

- reference information, including author, title, date and publisher
- sector of focus: early child development, education, health, social protection, urban development, housing and transport
- whether the evidence presented is direct or indirect: evaluation of particular intervention impacts or general economic arguments for interventions
- country of study
- local or national focus of the study/intervention
- level of income, according to the World Bank classification for lending (http://data.worldbank.org/about/country-classifications/country-and-lending-groups)
- type of welfare state, based on Muntaner 2010 (Integrating labour market and health service typologies – welfare regime implications for Health in All Policies and intersectoral action for health, WHO)
- intervention description/summary of objectives
- health and health equity impacts
- other impacts, other equity impacts
- methodology (when available)
- cost–benefits (if studied)
- search engine.

For more information on the work of WHO on social determinants of health, please visit
www.who.int/social_determiants/en/

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